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RESEARCH CENTER IN ECONOMIC DEVELOPMENT AND CULTURAL CHANGE

THE UNIVERSITY OF CHICAGO

ECONOMIC DEVELOPMENT AND CULTURAL CHANGE

A journal designed for exploratory discussion of the problems of economic development and cultural change. Preliminary versions of research findings and research hypotheses are welcomed in the interest of provoking constructive and fruitful discussion.

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EDITORIAL

With the present issue we relinquish our duties as editor of this journal and transfer them to the younger and more vigorous hands of our friend and colleague, Manning Nash. The work has been interesting and challenging throughout, and it provides much encouragement and satisfaction that the influence of this journal has grown through the last few years, that its readership has more than doubled since 1957, and that its financial position--a concern which unfortunately also must be taken account of--has become stronger than when we started publication of Economic Development and Cultural Change, seven years ago. We believe that our formula of providing a common ground of discussion for students of economic development and its social, cultural, and political concomitants has been a successful one, and it is planned to continue the journal essentially along the lines which have proven to make it of general usefulness to its readers.

It is customary to allow someone who is relinquishing an office an extraordinary indulgence; and the Board of Editors of this journal has exercised this prerogative in the present case. In view of the well-known interest of the departing editor in India and Indian affairs, they have authorized a special issue on problems of Indian economic growth and have encouraged us to collect contributions from young economists and social scientists from India. We believe that some of the most brilliant young men in the social science fields that India has produced in the last decade have contributed to this issue. We have supplemented their contributions by two or three pieces written by young American authors who also have long and profound acquaintance with India, have lived and worked there, and are familiar with its problems. They have written on topics which have so far received relatively little attention by Indian scholars, though they are of great importance for the evaluation of economic progress and social change in India.

In taking leave from the editorial duties on this journal, we should like to express our gratitude to our colleagues and friends on the Editorial Board, for the aid given by many in advising us on the merits of materials to be included in this journal, to the University of Chicago Press who have printed and distributed the journal, and most of all, to Mrs. Georgianna March who has done a multitude of tasks, too varied and too numerous to mention, and without whose cooperation the publication of this journal would have been infinitely harder.

We trust that with the interest of our friends and readers, under the guidance of our Editorial Board, and with the services of our staff, the journal will continue to perform a useful role in the examination and analysis of the complex problems arising in the study of economic development and cultural change.

Bert F. Hoselitz
Editor

INDIA'S SECOND PLAN: THE BACKGROUND

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As a result of serious foreign exchange difficulties, projected development expenditure under India's Second Five Year Plan has been reduced from an aggregate of Rs. 48 billion to Rs. 45 billion. It is possible that actual outlay will turn out to be even less; and it is certain that in physical terms the achievement will be around 80 percent of what was planned. At this point of time, therefore, it would be fair to say that the Second Five Year Plan will be somewhat less successful than intended, and less successful than the First Five Year Plan. Against this background, a detailed discussion of investment allocations and policies envisaged in the original plan might seem rather unreal. But, because the forces that shaped the original plan are still amongst the dominant constituents of India's planning environment and are likely to continue to remain so, our discussion is relevant. The present embarrassment is a result more of underestimation of the need for external resources than of illogicality in the pattern of development outlined in the Plan. An appreciation of this may help in seeing the Second Plan in its true perspective--as the first one of a series aiming at bringing about a long overdue change in the structure of production, investment, and occupation. We shall survey briefly the longer-term background to the Second Plan and then examine the immediate influences that gave the Plan its final shape. It is only fair to add that the following section on basic characteristics and pressures in the Indian economy is neither exhaustive nor unsullied by the author's value judgments.

I

It would be interesting but not very important to know when exactly massive poverty and insecurity became the prime characteristics of life in India. What is important is that they have been so long enough to matter and despite the economic and other achievements during the last hundred years and more. Much, indeed, happened in that period. India emerged as a nation with a greater sense of economic unity and stronger political structure than at any time previously. It built up an industrial sector of considerable size and efficiency, if not of great diversity, partly through the inflow of foreign capital and enterprise, partly through domestic effort and initiative. The growth of railways and communications, financial institutions, and foreign trade widened the horizon, added to the mobility of productive factors, and introduced variety in gainful occupations. And yet all these served not so much to make life different or less intolerable to the many who live in India's villages, as to heighten the contrast between their penury and the relative comfort of the few in the urban, industrialized areas. The domestic market no doubt grew in size; but it still remained a dominantly agricultural and cellular one, lacking in efficiency as a means of transmitting impulses from one sector to all the others.

Unlike other countries, where industrial development went hand in hand with revolutionary changes in all aspects of life, the growth of industries in India did little to change the ordinary business of life for most of the population. And all the while, population grew apace, swelling the ranks of the unemployed and the underemployed.

Perhaps things would have been different if India had a smaller population or a slower increase in it; or if greater capital resources had been available and used differently; or if the social institutions and outlook were less rigid; or if India's political history were less full of strife. But, in fact, India's position today is one of great want coupled with a great waste of human resources and inadequate exploitation of other natural resources. Both these are, in a sense, complementary to shortage of capital and the pattern of its use.

Any policy for economic development in India has to facilitate progressively more productive employment of more people. And this cannot be done without a profound change in the size and structure of investment. For, though increased productivity per acre is not only possible but essential in the agricultural sphere, achievement of this would have fruitful effects on growth only if it released resources for capital formation elsewhere in the economy. For this to happen, agricultural employment should, over a period, become a smaller proportion of the total--perhaps smaller in absolute volume than at present. This is another way of saying that further increases in population and the labor force cannot be usefully absorbed in agriculture and should be found employment elsewhere if they are not to constitute a drag on the economy. In this situation, industrialization becomes the principal means for economic betterment. The realization that without substantial industrial development the economic scene will not change is not a phenomenon of the past decade or two. What is of recent origin is the preoccupation of government with the ramifications of the problem.

Belief in the benefits of industrialization has not been affected by the failure of past industrial development to initiate a process of "take-off" in the economy. Until recently much of industrial development in India has been, so to speak, horizontal rather than vertical. The major industries--such as jute and cotton textiles, sugar and tea--have catered to ultimate consumers; and while they expanded the market for agricultural raw materials, they depended to an amazing degree on imports for their capital goods. Much the same is true of the railway and power industries; an increase in the demand for their products requiring an expansion of their capacity inevitably meant larger imports and not more employment elsewhere in the industrial sector. Save for a modest iron and steel industry and cement manufacturing, there was no complex of capital goods industries to support the consumer goods and utility industries. Thus, an increase in the demand for products of existing industries in India did not lead automatically to more demand for products of other industries, more employment and domestic incomes, more activity in consumer goods industries, and so on. It has usually meant more imports, greater ostentation in consumption, and speculative investments in land and real estate.

In view of this experience, industrialization in India has come to signify the building-up of a complex of capital goods industries to support a later expansion of consumer goods industries and an expansion of the "infra-structure" to support both. The development of these industries is emphasized not just

because of the direct contributions they will make to output and employment, but more because of opportunities they will create for enlarged investment and enterprise in other fields. This aspiration is, again, not unrealistic in view of the known reserves of real resources such as coal and iron, bauxite, manganese, hydro-power, etc.; the potential size of the domestic market; and the scope that exists now for import of modern techniques of production. One might say, rather naively, that having found no automatism in the development of basic and capital goods industries in the wake of growth in consumer goods and export industries, the present approach is to tackle the question directly from the side of the so-called "supporting" industries. This might look like a dangerous short-cut, but short-cuts are not to be sneered at when the existing road is a blind alley.

There are some complications in this situation. The effort to push ahead with large-scale capital goods industries will involve a disproportionately large use for that purpose of currently available capital resources--which, by all accounts, are very scarce. A corollary of this is, on the one hand, concentrated effort to augment total supply of capital and, on the other, considerable restriction of its use in consumer goods industries, including agriculture. What then happens to raising output in these sectors, without which the short-cut mentioned above might well turn out to be a short-cut to inflation? Admittedly, this is a difficult question, and thinking in India has been along the lines of more effective substitution of manpower and organization for capital as such in these industries. Apart from possible theoretical justification for this in terms of factor endowments, it has been obvious for quite some time that the desideratum in agriculture is structural reform and not just supply of investible funds. Indeed, it can be argued that without such reform, injection of more capital into agriculture might turn out to be virtually infructuous as an "impulse" factor.[1] To say that agricultural output should be increased and to say, at the same time, that supply of capital to agriculture should be restricted does not, in the present context, amount to contradicting oneself.

Again, in regard to organized consumer goods industries, restriction of additional investment seems reasonable on several grounds. For one thing, this is an area which is relatively well developed; some industries, like cotton textiles and vegetable oils, are even now capable of increasing production without substantial additions to installed capacity. For another, there are opportunities for more effective utilization of idle capacity in the small-scale unorganized wings of these industries. Handlooms and oil presses supply not an inconsiderable part of demand in the country, and with proper organization of production and distribution could expand their output significantly. There are, in other words, possibilities for adoption of capital-saving techniques of production in these industries and that, in fact, is what is being attempted.

The emphasis on capital-saving policies in agriculture and consumer-goods industries carries added significance when we look at the employment situation. As noted, it is futile to expect agriculture to support more people than at

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1. Unhappily, there has been more talk than effective action in respect of land reform in India, and the agricultural situation is far from satisfactory. The point that land reforms are essential for influencing the use-pattern of savings is still viewed as a matter for esoteric discussion only.

present, even at the same miserable standards of income. And the growth of heavy capital-goods industries will not by itself reduce underemployment in the same proportion as it adds to output. If unemployment is not to increase, it becomes essential to find jobs for more people in the consumption goods and construction industries. Prima facie this presents a deliberate choice in those industries between more employment per unit of output and more output per unit of employment. Opting for the former often involves a possible loss to society in the form of higher costs of production, but it also means a gain in the form of less unemployment. Whether the gain is worth the sacrifice is in the last analysis a matter for political judgment. In the Indian case, where increased production seems the one and only objective that the nation should be striving for, the concession to employment might appear somewhat unwise, if not downright mistaken. But a factor of great importance in present-day India, which economists can ignore but policy-makers cannot, is the massive impatience of the people with past standards of employment and distribution of income. Politically, it is not enough that Gross National Product increased by 5 percent; it is also necessary that while this happened a few millions more found adequate work and shared in the general increase.

The result is unremitting pressure on the central and state governments to take positive action for accelerating industrial development and reducing inequalities in economic and social status. This is not just a reflection of popular distrust of private enterprise and the market mechanism. There is undoubtedly a certain amount of it. But far more important is, as mentioned earlier, the view that the principal task today is that of strengthening the base of the economy--by expanding transport, power, and irrigation facilities and initiating the development of capital and intermediate goods industries. Investments in these do not necessarily yield the highest private returns in the short- or even the medium-term. It is consequently somewhat unrealistic to expect private investment to go into these fields in a sufficiently large measure. Moreover, it can be and has been argued that the development of such industries by government could well stimulate larger private investment in other important fields, and at the same time prevent undue concentration of economic power in private hands.

All of this is not to say that everything in the Second Plan had to be what it is because of the immutable facts of history. The purpose is to make in a rough and somewhat dogmatic fashion the point that there are certain ineluctables in the Indian environment which no plan or development program can fail to take into account if it is to have a chance of success. Undoubtedly, the precise manner in which they are taken into account is influenced by a variety of factors obtaining in the present and the immediate past. On these, we shall have some comments to make in the following sections. But the short-term factors do not by themselves explain the main elements in the approach to planned development in India.

II

The thesis that the state should take an active part in promoting economic development had found favor in India well before the nineteen-fifties. Even prior to World War II, the Indian National Congress had set up a planning committee of its own, and not a little of the Congress Party's prestige was due to the program of social and economic amelioration it sponsored while in power in the

provincial governments during the nineteen-thirties. Towards the last years of the war, a host of "plans" were prepared and publicized by political parties, individuals, and even by a group of leading businessmen. In 1945, two years before the formal transfer of power, the Central Government had created a Planning and Development Department to examine projects proposed by federal departments and state governments. Much of the planning work in that period was not properly coordinated and was, by and large, dominated by the idea that all that was necessary was for state governments to think up a number of projects which could be taken in hand and financed by drawing on the large sterling balances that India had amassed during the war years. Several projects, especially in the field of agriculture and power, were in fact started in the late forties. But it was not until the preparation of the First Five Year Plan in 1950-51 that all the implications of systematic planning were realized and a serious attempt made to organize development effort properly.

For various reasons, India's First Five Year Plan started under very unpropitious circumstances. Sterling payments to the U.K. and Pakistan, decontrol of imports and prices in 1948, increased spending out of past accumulations by both government and private agencies, crop failures, and so on had caused foreign exchange balances to drop substantially and domestic prices to rise substantially. The Korean War helped strengthen the foreign exchange position somewhat, but greatly worsened the price situation. The First Plan started, in other words, in a climate in which inflationary pressures had just begun to ease, food shortage was still serious, and government had to exercise considerable restraint in its spending. This was certainly not the climate for programming on a grand scale.

Under the circumstances, the First Plan concentrated on two things. First and foremost, it sought to integrate the programs of the various state governments and government agencies in India into a consistent pattern. In the second place, and perhaps more importantly, it sought to fit all these into the perspective of a long-term program and prepare the nation for a more massive effort in the future. By clarifying the inter-relations in the economy; by emphasizing the magnitude of the task involved; by setting out the conflicts in policy and imbalances in growth that might have to be faced during periods of sustained economic development; and by drawing attention to the need for changing traditional social institutions and attitudes in a way that fostered progress, the First Plan contributed to constructive effort in a manner which was probably more significant than its direct effect on capital formation.

As noted, the First Plan was more a public expenditure program than a full-fledged national investment plan. This remains true even allowing for the private industrial investment outlined for the five-year period 1951-56. Within the public sector itself, a progressive increase in annual development outlay was envisaged, so as to add up to a five-year total of Rs. 20.7 billion.[2] Of this, nearly 39 percent was devoted to agriculture and community development, irrigation schemes, and multipurpose (irrigation, flood control, and power) projects. Transport, principally railways, claimed 24 percent, and a variety of other items such as education, public health, power, housing, and refugee rehabilitation accounted for about 29 percent of planned expenditure. Government outlay

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2. This was subsequently raised to Rs. 23.7 billion. However, actual spending in 1951-56 was, at Rs. 20.1 billion, less than the original total.

on industry as such was estimated at only Rs. 1.7 billion or 8.4 percent of the total. This was viewed largely as investment at strategic points supplementing about Rs. 6.0 billion of anticipated private industrial investment in the five-year period.[3] Immense multi-purpose river valley projects, rather than integrated steel plants, were the symbol of the First Plan.

It might at this stage be helpful to compare these figures with the allocations proposed in the Second Plan, keeping aside for the moment the difference in the size of aggregate outlays. The Second Plan assigned 30.8 percent of expenditure in the public sector to agriculture, community development, irrigation, and power; 28.9 percent to transport and communications; 21.8 percent to social services, etc.; and 18.5 percent to industry and mining. Compared with the First Plan, therefore, the attention to be paid to industrial investment was far more and that in respect of the agricultural sector somewhat less. Even more striking was the fact that in the industrial sphere government investment was to be over Rs. 8 billion, compared with Rs. 6.2 billion of private industrial investment.[4] In terms of actual outlay, this meant a fourfold increase in government investment and a doubling of private investment from the levels of the First Plan.

This shift in emphasis has attracted more notice than almost anything else in the Second Plan and has been criticized as too sudden a departure from the past. One can say in retrospect that the Second Plan tried to take too big a jump from the position attained at the end of the First. But there was never any doubt about the direction of the jump. The justification for the system of priorities in the First Plan was partly in terms of the need to complete the projects already under execution, but partly as a means of sustaining a higher tempo of industrial development in the next phase.[5] In the public sector, the First Plan stated very explicitly that "in the transformation of the economy that is called for, the state will have to play the crucial role... This need not involve complete

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3. The First Five Year Plan, Planning Commission, Government of India, New Delhi, 1952, pp. 70-71, 436 (referred to hereafter as First Plan). The figure for private investment, it should be noted, was an estimate rather than a "target" supported by specific policy recommendations. Of the Rs. 6 billion industrial investment in the private sector, only Rs. 2.3 billion was for new industrial plant and equipment. The rest was to be largely in the nature of modernization and replacement outlay.

4. In this connection, it is important to remember the following details. Of the public investment mentioned above, Rs. 2 billion was for development of "village and small industries"--mostly through government assistance to private undertakings. Another Rs. 550 million was for financial assistance to private industry through the National Industrial Development Corporation, set up for the purpose by Government. On the other hand, the figure for private investment is exclusive of investment in mining, electric power generation and distribution, plantation and small-scale industries. If allowance is made for these, the weight given to "public enterprise" in the industrial sector would appear significantly different. See Government of India, Planning Commission, The Second Five Year Plan, New Delhi, 1956, pp. 2-3. (Referred to hereafter as Second Plan.)

5. First Plan, pp. 31-32.

nationalization of the means of production or elimination of private agencies in agriculture or business or industry. It does mean, however, a progressive widening of the public sector and a re-orientation of the private sector to the needs of a planned economy."[6] In other words, the well-known characteristics of the Second Plan--emphasis on industrialization and larger participation by government in this field--were not bright ideas that were thought up in a moment of euphoria, but were part and parcel of the received approach to planning. They took clearer shape in the plan now in operation because progress under the First Plan exceeded expectations and colored the prospects regarding the future--perhaps unduly. For a judgment on this, we must take a closer look at the developments immediately preceding the Second Plan.

III

India's Second Five Year Plan, covering the period 1956-61, was drawn up during 1954-55--the last two years of the First Plan. It was by then apparent that both investment and output in the economy had increased substantially as compared to the pre-plan years. Net investment had risen from about 5 percent of national income to an estimated 7.3 percent in 1955-56; the rise in national income over the five-year period 1951-56 was of the order of 18 percent--from Rs. 91 billion to Rs. 108 billion[7] (at 1952-53 prices). While the additional investment was partly facilitated by the use of external resources, its extent was much less than anticipated at the time of the First Plan. Against the estimated need for external assistance (for the public sector program) of Rs. 5.2 billion and for withdrawal of Rs. 2.9 billion from India's sterling balances, actual utilization amounted to about Rs. 2.0 billion of the former and Rs. 1.38 billion of the latter.[8] Nor was the comfortable position of the external account bought at the cost of large increases in the domestic price-level. Prices were in fact falling until the middle of 1955, and even though they started rising subsequently, they were prior to the start of the Second Plan well below their 1951-52 level. Undoubtedly, the unusually good harvests of 1953-54 and 1954-55 were largely responsible for this happy position; they contributed both to saving on food imports and to keeping prices low.

The significance of these basic indicators was further enhanced by certain other features of the situation. All of this had happened concurrently with sizeable deficit spending by government and a progressive dismantling of price and distribution controls. The increase in government's development expenditure from Rs. 2.7 billion in 1951-52 to nearly Rs. 6.7 billion in 1955-56--involving as it did more taxation and public borrowing than in earlier years--did not come in the way of the private sector's achieving its targets. Private investment in new industrial plant and equipment surpassed the target of Rs. 2.3 billion set for the five years 1951-56; and the increase in industrial output, at 22 percent, was faster than that in national income (18 percent).[9] Even in

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6. First Plan, pp. 31-32.

7. Second Plan, pp. 2-3.

8. Review of the First Five Year Plan, Planning Commission, New Delhi (May 1957), pp. 12-23.

9. Second Plan, p. 4.

agriculture, it was evident that extension of irrigation facilities, increased supply of fertilizers, encouragement of the Japanese method of rice cultivation, etc., had contributed in a not inconsiderable measure to higher production. And in the transport sector, by the end of the First Plan the process of rehabilitation of the railway system was nearly complete.

Besides these, the climate had changed on the political and social fronts too. There had been a noticeable easing of tension in the international sphere, and in late 1955, the possibility of obtaining economic assistance from abroad appeared better than at any time previously. Within the country, the multitude of legislative and administrative measures taken for purposes of modifying social institutions and arrangements were beginning to have effect. Old habits were breaking down and new tastes were developing; and above all, there was growing confidence in the ability of the nation to develop.

Insofar as the planners were concerned, the big difference that the changes in the economic and social environment made was that the field for choice was much wider than at the time of formulation of the First Plan; and the possible alternatives had to be closely examined before deciding the priorities. In this, the Planning Commission had the advantage of knowing broadly the views of the Parliament and the ruling party on the relative emphasis to be placed on employment, decentralization, public control of business, and so on. Secondly, the quality and quantity of data available to the planners had improved, partly in the form of experience gained in implementing the First Plan, and partly as a result of surveys and inquiries. All of these facilitated the drawing-up of a well-articulated program covering both the public and private sectors.

As mentioned earlier, the approach to planning in 1954-55 was not basically different from what it was in 1950-51. What was different was the judgment in regard to the magnitude of effort that could be undertaken in the second plan period, and the explicit tying-up of sector programs into a national investment plan. The Second Five Year Plan derives logically from the dominant characteristics of the Indian economy elucidated in Section I. Structurally, it is an imposing program and a highly sophisticated one. Why, then, has a program drawn up with such care and investment of economic expertise gone awry? Like all programs, the Indian Plan was based on forecasts and estimates of possible reactions and responses in society, manifested in the form of changes in economic magnitudes. It is these forecasts and expectations that were colored by the transient events of 1954-55 and resulted in the setting of targets which in retrospect have turned out to be too optimistic.

Let us turn briefly to some magnitudes which illustrate this. The Second Plan aimed at increasing national income by 25 percent over the five-year period; creating 10 million new full-time jobs and considerable part-time employment; raising net domestic savings from an existing level of 7 percent of national income to about 10 percent in 1960-61; intensifying industrial development and thereby initiating a long overdue change in occupational structure. These were to be achieved alongside of more equal distribution of income and economic power and maintenance of a democratic structure.[10]

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10. Second Plan, pp. 24, 73-75.

The target in regard to national income was no doubt influenced by the 18 percent rise in the previous quinquennium. For political and psychological reasons, the Second Plan had obviously to shoot at something higher than what had been achieved in the past, even if fortuitous circumstances like favorable weather had contributed sizeably to that achievement. The Planning Commision was, it is only fair to say, aware of the fact that what may be called the enduring increase in national income between 1951 and 1956 was not more than 14 percent. Consequently, in working out the investment necessary for reaching the national income target, they assumed a capital-output ratio substantially higher than that in the previous period. One sees from hindsight that even so, they took too optimistic a view of the future in basing their targets on an incremental capital-output ratio of only 2.3:1, compared to 1.8:1 in the First Plan.[11] The fact that a greater proportion of investment in the Second Plan was to be in heavy industries and transport and the progressive using-up of excess capacity as the Plan progressed should have led them to adopt a higher capital-output ratio.

A similar failing to allow for a sufficiently wide margin of error is observable in respect of the marginal savings ratio. On the basis of projections for national income and investment, the Plan required a rate of saving of over 20 percent of the additional income expected to be generated over the Plan.[12] The problem here was not only the magnitude of marginal savings expected, but the hope that such a rate was consistent with policies to redistribute incomes and little or no resort to compulsion in matters of private saving. It is arguable that the deficit-financing of Rs. 12 billion envisaged in the Plan implied considerable forcing of savings in the economy, since its effects were not expected to be fully offset by utilization of existing capacity and use of sterling balances. But even with that order of deficit-financing, it was obvious that more direct efforts to stimulate and mobilize private savings were required in order to reach the investment targets.

The inadequacy of measures directed towards mobilization of domestic resources was naturally reflected in a worsening of the balance of payments position; and the original estimates in regard to the external resources needed for the program turned out to be widely off the mark. It was estimated that the balance of payments deficit in India's current account would be about Rs. 11.2 billion, taking into reckoning both the direct and indirect demands on foreign exchange resources arising from the Plan. About Rs. 2 billion of this was to be met by withdrawals from India's foreign exchange reserves, and the remainder, Rs. 9 billion, through foreign loans and grants.[13] What has actually happened is that with about half the planned expenditure still to be incurred, India has used up over Rs. 5.5 billion of her foreign exchange reserves, besides foreign loans and grants of Rs. 2.5 to Rs. 3 billion.

As in the case of capital-output and savings ratios, the gross underestimation of the foreign expenditure component of increased expenditure in the economy is, on a superficial view, a technical error--a mistake in assigning

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11. Second Plan, p. 9.

12. Estimated.

13. Second Plan, pp. 102-103.

value to a coefficient in a basic equation. But in an integrated program like India's Second Plan, these errors result in an inadequate appreciation of the effort involved and of policy measures necessary to attain the targets.

There is little doubt that if India is to develop, it has to be through a transformation of the economic structure along the lines envisaged in the Second Plan. But this transformation is not assured by sophistication in formulating the program or the genuineness of the aspirations. It has in the last analysis to depend on the effectiveness of policy measures to stimulate the sort of responses assumed in shaping the program and setting the targets. It is in this area that the original program tended to be vague, with the result that problems which once seemed amenable to solution through fairly simple methods have now cumulated to such an extent as to call for drastic remedies.

Appendix

[The following summary tables are attached with a view to giving a broad idea of the magnitudes of outlay envisaged in the First and Second Five Year Plans, the expected sources of finance, and the extent of realization under different heads of the First Plan targets. The figures in the body of the article are in the main derived from these tables, with additional explanations where needed.]

Table I. Distribution of Plan Outlay by Major Heads of Development: Public Sector
(in millions of Rupees)

	First Plan				Second Plan	
	Anticipated		Realized		Anticipated	
	Outlay (1)	% of total (2)	Outlay (3)	% of total (4)	Outlay (5)	% of total (6)
I. Agriculture and community development	3,393	14.3	2,842	14.1	5,680	11.8
II. Irrigation and power	6,474	27.2	5,850	29.1	9,130	19.0
III. Industry and mining	1,882	8.0	998	5.0	8,900	18.5
IV. Transport and communications	5,700	23.9	5,315	26.4	13,850	28.9
(of which railways)	(4,000)		(4,320)		(9,000)	
V. Social services	6,328	26.6	5,119	25.4	10,440	21.8
Total	23,777	100.0	20,124	100.0	48,000	100.0

Col. 1: outlays as revised in 1953.
Col. 3: actual for 1951-55 plus revised estimates for 1955-56.
Row II: includes multi-purpose river valley projects.
Row V: includes medical and public health, education, rehabilitation, and miscellaneous.
Source: Review of the First Five Year Plan, pp. 9-10; Second Plan, p. 56.

Table II. Anticipated Investment in Private Sector (1956-61)

	(Rs. Million)
1. Organized industry and mining	5,750
2. Plantations, electricity undertakings, transport other than railways	1,250
3. Construction	10,000
4. Agriculture and village and small-scale industries	3,000
5. Stocks	4,000
Total	24,000

Source: Second Plan, p. 57.

Table III. Sources of Finance for Public Sector Programs
(in millions of Rupees)

	First Plan		Second Plan
	Anticipated	Realized	Anticipated
	(1)	(2)	(3)
1. Savings of public authorities from current revenues	5,697	5,743	8,000
2. Savings from earnings of railways	1,700	1,154	1,500
3. Loans from the public	1,150	2,044	7,000
4. Small savings and unfunded debt	2,700	3,036	5,000
5. Deposits, funds, and other miscellaneous sources	1,328	796	2,500
6. External assistance	5,210	2,032	8,000
7. Deficit financing	2,900	5,319	12,000
8. Gap to be covered by additional domestic resources			4,000
Total	20,685	20,124	48,000

Col. 1: as envisaged in the original First Plan. When the aggregate was revised upwards to Rs. 23,777 million, there was no allocation amongst the various items.

Col. 2: actuals for 1951-54 plus revised estimates for 1955-56.

Col. 3: the precise way in which the "gap" of Rs. 4 billion was to be covered was left vague in the Plan document. The intention was to step up taxation, borrowing, etc., beyond the increases presumed in rows 1, 3, and 4.

Sources: Review of the First Five Year Plan, pp. 23, 39-40; Second Plan, pp. 77-78.

Table IV. Sources of Finance for Industrial Programs in the Private Sector (other than mining, electric power, plantations, and small-scale industries)

	(Rs. Million) 1951-56	1956-61
1. Funds provided through National Industrial Development Corporation	-	550
2. Loans from Industrial Finance Corporation, State Finance Corporations, and Industrial Credit and Investment Corporation	180	400
3. Direct and indirect loans and participation in share-capital by Central and State Governments	260	200
4. Foreign capital (including suppliers' credits)	450	1,000
5. New capital issues	400	800
6. Internal resources (of enterprises available for investment)	1,500	3,000
7. Other resources, such as Excess Profits Tax Refunds, advances from managing agents, etc.	640	800
Total	3,400	6,750
Total Outlay Envisaged*		7,200

Note: provision is made for items (1), (3), and part of (7) in the public sector's financial budget.

* New investment plus expenditure on replacements and modernization.

Source: Second Plan, p. 405.

POPULATION GROWTH AND BALANCE IN ECONOMIC DEVELOPMENT

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Population growth constitutes one of the basic variables affecting the course of economic development. It has a two-fold importance; as a consumption entity, the size and structure of population influences the rate and pattern of consumption; as an indispensable productive agent, it forms one of the main determinants of the levels of production. Rising levels of production depend not only on the growth of population and labor force, but also on the effectiveness of its employment. Sustained economic development in the sense of continued growth of output would imply, in the first instance, a process of movement of workers from the less productive to the more productive spheres of employment. Short of regimentation and control, it could only be maintained by providing adequate incentive for the workers to move in the desired directions. Secondly, it would also require an intersectoral balance in the process of exchange. It is the purpose of this paper to investigate how far these conditions of balanced economic development could be maintained in the densely settled low-income areas, if their populations grow rapidly.

Present Economic-Demographic Structure

1. The areas under consideration have a high population growth potential. Spectacular decline in mortality following recent advances in medicine and public health coupled with a nearly constant birth rate have produced a natural increase of about 3 percent in areas like Taiwan, Ceylon, and Egypt. Indian population grew at an annual rate of only 1.25 percent during the last decade; but with her present medical and public health programs she may soon share with other low-income areas the trend toward rapid decline in mortality and accelerated growth, unless something happens to reduce the birth rate.

2. Per capita income in these areas is appallingly low, averaging less than $100 per annum. Low income means a low rate of saving and capital formation which is barely sufficient to offset the effects of population growth and, therefore, perpetuates economic stagnation.

3. With low income people fail to satisfy even the basic needs. Food consumption is inadequate in quantity, average intake being less than 2,100 calories, as against a minimum normal requirement of 2,400 calories. The deficiency must be more acute with respect to quality. Food purchases, therefore, claim a priority on any increase in personal incomes, and the areas show the characteristics of what Professor Schultz calls a "high-food-drain-economy".

4. More than two-thirds of the people continue to depend on agriculture. With the steady growth of population in recent decades, this has created the problem of surplus labor in agriculture. Estimates of this surplus vary widely from

15 to 20 or even 30 percent of the working force on land in South-East Asian countries.[1] Assuming the plow and bullock technique and the existing crop patterns, Professor Lewis calculates for India "that at least a quarter of the agricultural population is surplus to requirements. This is equivalent to having some twenty million people permanently unemployed."[2] Calculating on the basis of plow units, i.e., "an area of cultivated land which, in given conditions, a plough and a pair of bullocks can manage", Tarlok Singh estimated a surplus of 21 to 22 million workers in British India in 1945.[3] On the same reckoning, the present number of the unemployed would run up close to 30 million. While no accuracy can be claimed for any of these estimates, it is obvious that the size of surplus labor force in agriculture is large, and increase in agricultural production may not require for long any additional labor, even with existing technology.

The problem, therefore, is to avoid accumulation of unwanted labor on land by developing the non-agricultural sector and, at the same time, to prevent food shortage and rising living costs from limiting the growth of the economy by increasing agricultural production. We shall examine this problem with the help of a two-sector model of economic growth, taking India as our case study.

The Model of Growth and Income Projections: The Assumptions

1. Population growth--Table I gives two sets of projections of population, equivalent adult consumers and labor force for India, a high projection based on the assumption of constant fertility, and a low projection which assumes that fertility would decline linearly to half the present level by 1981. Mortality is assumed to decline from about 26 in 1951 to 15 in 1981 in both cases. Population would increase from 384 million in 1956 to 745 million in 1986 under the assumption of constant fertility, and to 571 million with declining fertility; labor force would increase from 153 million to 275 and 255 million respectively. Since the object of the present investigation is to illustrate the economic implications of differential rates of population growth, it is not necessary for us to verify which, if either, of these projections would represent the actual course of population growth and labor force.

2. Agricultural production--We assume that agricultural production would increase at an annual rate of 3.6 percent. This would double the agricultural output within 20 years and increase it 2.8 times by 1986. The original target for the Second Five Year Plan was an increase of 18 percent; it has recently been revised to 27 percent, and it is proposed to double the output in ten years. Exactly how this will be attained is not clearly indicated. With all the efforts towards intensive cultivation, Japan took 30 years (1885-1915) to increase her farm output by 77 percent.[4] Compared with this, even the target of doubling the output in 20 years appears ambitious.

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1. Ragnar Nurkse, Problems of Capital Formation, p. 134.

2. W.A. Lewis, Aspects of Industrialization, Cairo, 1953, p. 8.

3. Tarlok Singh, Poverty and Social Change, p. 136.

4. B. F. Johnston, "Agricultural Productivity and Economic Development", Journal of Political Economy, 1951.

Table I. Projections* of Population, Equivalent Adult Consumers and Labor Force (In Millions)

	1956	1961	1966	1971	1976	1981	1986
Population							
High fertility	384	422	469	524	588	662	745
Low fertility	384	418	455	490	522	549	571
Equivalent Adult Consumers							
High fertility	317	348	387	434	490	555	629
Low fertility	317	346	379	415	449	480	507
Labor Force							
High fertility	153	165	181	199	222	246	275
Low fertility	153	165	181	199	220	240	255

* Coale-Hoover Report on Population Growth and Economic Development in India (in press).

3. Average and marginal coefficient of investment--Average coefficient of investment is the ratio of investment to income in any period. Marginal coefficient is the fraction of additional per consumer income which is captured for investment. We denote it by the symbol α. A marginal rate higher than the average would step up the rate of investment and accelerate the growth of income.

The First Five Year Plan assumed that from 1956-57 onwards investment would be stepped up each year by an amount equal to 50 percent of the additional output. The Second Plan considers this target to be excessively high. Investment projections in the Second Plan appear to be based on a marginal coefficient running close to .3 till 1970-71. We assign the same value to α in our model. With a given α, the rise in the rate of investment would depend both on the increase in output and the growth of population. A higher rate of population growth would reduce the extra amount per consumer and, therefore, the additional sum available for investment with the assumed value of α.

4. Incremental capital-output ratio--We denote this ratio by β and assign it different values for the agricultural and the non-agricultural sector. According to the Second Plan, the ratio between projected investment and increase in output in the agricultural sector is approximately 1.25:1, that in the non-agricultural sector, 2.8:1. With the current factor proportions in India, capital-intensive technology would be obviously uneconomical for Indian agriculture. Improvements in agricultural productivity would depend more upon new techniques (crop rotations, improved agricultural practices, seeds, and fertilizers), organizational changes (such as consolidation of holdings, cooperative farming, and national extension services), and improved skills and education of the farmer rather than upon capital equipment. Hence we assume that the present value of β' (capital-output ratio in agriculture) would remain constant.

In the non-agricultural sector, greater emphasis on large-scale industrialization would require more capital per unit of output. Moreover, there exists at present unused capacity in many industries; as this is exhausted, the ratio

would tend to rise. But there are also forces which would work in the opposite direction. For example, improved technology, greater skill and efficiency in handling equipment, and a more intensive utilization of economic overheads would favor a decline in capital-output ratio. It is difficult to estimate the net effect of these forces. Hence we assume rather semi-arbitrarily two values of β'' (capital-output ratio in the non-agricultural sector): (a) the initial $\beta'' = 2.8$, rising after 1961 by .4 every five years until it attains a maximum value of 4.1 by 1976, and (b) a constant $\beta'' = 2.8$.

5. Closed economy--Our model is based on a closed economy in which equilibrium is attained through the action and inter-action of forces internal to itself.

The Model

Given the above assumptions, we set a global model of growth with two integrated sectors--the agricultural sector and the non-agricultural sector. The agricultural sector grows, by assumption, at a constant rate of 3.6 percent. The growth of the non-agricultural sector depends upon investment and productivity. Productivity is an independent variable with the values given above. Investment is a dependent variable subject to the parametric constant $\alpha = .3$, and an initial level of investment in 1956 of 7.3 percent of national income.

The model may be described in the form of equations as follows:

(1) $Y = Y' + Y''$, where Y is national income, Y' is income from the agricultural sector, and Y'' is income from the non-agricultural sector.

(2) $Y'_t = Y'_o (1 + .036)^t$, where subscripts o and t refer to the initial period and period t, respectively.

(3)[5] $I_t = C_t \left[\frac{I_o}{C_o} + \alpha \left(\frac{Y_t}{C_t} - \frac{Y_o}{C_o} \right) \right]$, where I_t is net investment at time t, $\frac{I_o}{C_o}$ is the per consumer investment in the initial period, and α is the marginal coefficient of investment.

(4) $I_t = I'_t + I''_t$, where I'_t is net investment in the agricultural sector, and I''_t is net investment in the non-agricultural sector.

(5) $I'_t = (Y'_{t+1} - Y'_t)\beta'$, where β' is the capital-output ratio in the agricultural sector.

(6) $I''_t = I_t - I'_t = C_t \left[\frac{I_o}{C_o} + \alpha \left(\frac{Y_t}{C_t} - \frac{Y_o}{C_o} \right) \right] - (Y'_{t+1} - Y'_t)\beta'$

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5. This equation is basically similar to the one used by Professors Coale and Hoover in their model of economic growth in India.

$$(7) \qquad Y''_{t+1} = Y''_t + \frac{C_t\left[\left[\frac{I_o}{C_o} + \alpha\left\{\frac{Y_t}{C_t} - \frac{Y_o}{C_o}\right\}\right] - (Y'_{t+1} - Y'_t)\beta'\right.}{\beta''}$$

, where β'' is the capital-output ratio in the non-agricultural sector.

$$(8)^6 \qquad Y_{t+1} = Y'_o(1+.036)^{t+1} + Y''_t + \frac{C_t\left[\left[\frac{I_o}{C_o} + \alpha\left\{\frac{Y_t}{C_t} - \frac{Y_o}{C_o}\right\}\right] - (Y'_{t+1} - Y'_t)\beta'\right.}{\beta''}.$$

Tables IIA and IIB give projections of output in the two sectors, as obtained from our model, for a period of three decades. It shows that agricultural production would increase 2.8 times by 1986. Increase in non-agricultural production varies with the assumed capital-output ratio and fertility level. With rising capital-output ratio, the non-agricultural sector would expand 4.3 times under high fertility and 4.8 times under low fertility. A constant capital-output ratio produces more spectacular results; 1986 output being 6.6 and 7.7 times the initial level respectively.

Balance in the Shift of Labor Force

Let us now consider the employment implications of the sectoral growth pattern outlined above. As observed earlier, agriculture is heavily overcrowded, and increase in agricultural production would not require additional labor; at best, it could absorb the vast amount of existing labor rendered superfluous by organizational changes and technological improvements. Effective employment would, therefore, require that all natural increase of labor force be drained off the farm

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6. For the sake of computational convenience, the projections are made for successive periods of 2.5 years. Population projections are given by five year periods, and the values for a 2.5 year period are obtained by linear interpolation. The formula used in actual interpolation thus runs as follows

$$Y_{t+2.5} = Y'_o(1+.036)^{t+2.5} + Y''_t + \frac{2.5C_t\left[\left[\frac{I_o}{C_o} + \alpha\left\{\frac{Y_t}{C_t} - \frac{Y_o}{C_o}\right\}\right] - (Y'_{t+2.5} - Y'_t)\beta'\right.}{\beta''}$$

The initial data used in making projections are:

1. Y_o, National income in 1956 = 108,000 million rupees.
2. Y'_o, National income arising in the agricultural sector in 1956 = 52,300 million rupees.
3. Y''_o, National income arising in the non-agricultural sector in 1956 = 55,700 million rupees.
4. I_o, Investment outlay in 1956 = 7,880 million rupees.
5. C_o, Equivalent adult consumer population in 1956 = 316.8 million.

Table II. Rate of Investment and Indices of Output (1956 = 100)

A. Capital-output ratio in the non-agricultural sector rising from 2.8:1 to 4:1

	1956	1961	1966	1971	1976	1981	1986
National Output							
High fertility	100	120	147	182	226	283	360
Low fertility	100	121	148	184	232	296	385
Output in the Agricultural Sector							
High fertility	100	119	141	168	199	237	281
Low fertility	100	119	141	168	199	237	281
Output in the Non-agricultural Sector							
High fertility	100	122	153	196	251	327	433
Low fertility	100	122	154	200	262	351	483
Investment Outlay as Percent of National Output							
High fertility	7.3	9.3	11.2	12.9	14.5	15.9	17
Low fertility	7.3	9.4	11.6	13.9	16.1	18.4	19

B. Capital-output ratio in the non-agricultural sector constant at 2.8:1

National Output							
High fertility	100	120	148	195	256	348	507
Low fertility	100	121	154	201	270	377	548
Output in the Agricultural Sector							
High fertility	100	119	141	168	199	237	281
Low fertility	100	119	141	168	199	237	281
Output in the Non-agricultural Sector							
High fertility	100	122	155	209	296	434	656
Low fertility	100	122	157	221	321	488	768
Investment Outlay as Percent of National Output							
High fertility	7.3	9.3	11.3	13.0	16.0	17.1	18.2
Low fertility	7.3	9.4	11.8	14.1	17.5	18.7	20.1

This would yield the employment targets shown in Table IIIA. If agricultural labor force is held constant, employment in the non-agricultural sector would have to increase, by 1986, 3.8 times the initial level under high fertility and 3.3 times under low fertility.

Balance in the process of labor force shifts raises the issue of relative levels of productivity and per capita income in the respective sectors. Development experience in various countries indicates the virtually universal persistence

Table III. Indices of Non-agricultural Employment

A. Non-farm to farm income ratio 2:1

Year	Employment Targets: High fertility	Employment Targets: Low fertility	Actual employment possible with: β'' = 2.8 rising to 4:1: High fertility	β'' = 2.8 rising to 4:1: Low fertility	β'' = 2.8 constant: High fertility	β'' = 2.8 constant: Low fertility
1956	100	100	100	100	100	100
1961	127.6	127.6	138.4	138.4	138.4	138.4
1966	164.4	164.4	146.5	146.5	148.4	150.2
1971	205.8	205.8	157.4	160.6	167.9	177.5
1976	258.7	254.1	170.2	178.6	200.7	217.8
1981	313.9	300.1	186.1	199.9	247.2	277.9
1986	380.6	334.6	207.9	232.6	315.1	368.9

B. Non-farm to farm income ratio 2.68:1

1956	100	100	100	100	100	100
1961	127.6	127.6	102.5	102.5	102.5	102.5
1966	164.4	164.4	108.5	108.5	109.9	111.3
1971	205.8	205.8	116.6	119.0	124.4	131.5
1976	258.7	254.1	126.1	131.1	148.7	161.3
1981	313.9	300.1	137.9	148.1	183.1	205.9
1986	380.6	334.6	154.0	171.9	233.4	273.3

of a per capita income differential between agriculture and the rest of the economy. Such differentials tend to be larger when industrialization and urbanization are proceeding rapidly, and it is believed that they are required to produce a redistribution of labor force away from the agricultural sector. However, for India we take as our first simple assumption that the existing (1956) ratio between non-agricultural and agricultural per capita incomes (2.68:1) would be adequate to maintain a steady movement of labor away from the farm. Given the growth of output in the two sectors indicated earlier, the increase in non-agricultural employment that would be possible under this assumption is shown in Table IIIA.[7]

7. The possible increase in non-agricultural employment is obtained from the formula:

$$\frac{E''}{E''_o} = \frac{Y''}{Y''_o} \times \frac{Y'}{Y'_o}$$

where E''_o is employment in the non-agricultural sector in the initial period; E'' is increase in non-agricultural employment in the given sector; Y''_o is income in the initial period, and Y'' is increase in income in the non-agricultural sector in the given period; Y'_o is income in agriculture in the initial period, and Y' is increase in income in the given period. It is evident from the formula that if the relative increase in income in the non-agricultural sector is equal to the relative increase in

Table IIIA brings out clearly the discrepancy between the actual and needed expansion of employment in the non-agricultural sector. It shows that even under the more liberal assumption regarding productivity of investment, non-agricultural employment in 1986 would be 130 percent above the 1956 level, while the required increase in the high fertility situation is 281 percent. When fertility declines, the actual increase in non-agricultural employment is 170 percent as against the target of 235 percent. This shows that our model employment structure, with labor force in agriculture held constant, could not be realized in any case, if the existing disparity in relative incomes in the two sectors is necessary to shift the workers to the non-agricultural sector.

However, the assumption of constant relative incomes in the two sectors may be too rigid. Relative incomes in the non-agricultural sector may be too high at present, and movement of workers off the farm could perhaps be maintained with a lower income differential. Colin Clark observes, "Where agriculture is overcrowded, the marginal product may be even less than half the average product, and the facilities for transferring labour into industry are unusually good."[8] But it may be noted that an agrarian system organized on a family basis assures to each working member an income equal to average earnings on the farm, even though his marginal contribution may be negligible. What would determine the movement of workers is not the ratio of marginal product in industry to marginal product in agriculture, but to the average product of the marginal class of agricultural laborers and non-land-owning cultivators. Average earnings of this class are relatively lower, and to that extent movement would take place in response to a lower income differential. If in the future, schemes of land reclamation, extension services, and rural development give special benefits to this class and raise its average income, incentive incomes in the non-agricultural sector would have to be correspondingly higher.

It may also be suggested that the rural non-farm employment would draw labor off the farm by offering a lower earnings premium. The employment argument in favor of the small industry is, indeed, very strong. But, pressed too far, it may go at the cost of economic development. Economic development would demand considerable emphasis on the large corporate and state enterprise sector. Relative incomes in this sector would have to be higher not only because it requires more specialized and disciplined personnel, but also because it has to provide for a large element of reserves and investible surpluses which are never commuted into personal incomes.

The foregoing considerations suggest that the non-farm to farm income ratio could not be substantially reduced without impeding the flow of labor outside agriculture. The present ratio is approximately 2.68:1. On a liberal guess, we may assume that it could be reduced to 2:1. The increase in non-agricultural

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income in agriculture, employment in the non-agricultural sector will remain constant.

8. Colin Clark, Conditions of Economic Progress, p. 454.

employment possible under this assumption is shown in Table IIIB.[9] Increase in employment under our low income projection still falls short of the additional labor force to be absorbed. With the higher income projection, however, the actual expansion of employment in the non-agricultural sector by 1986 would be 270 percent, as against the needed expansion of 235 percent in the low fertility situation; it could thus draw off a small fraction of the existing labor force from the farm in addition to all the natural increase. However, when fertility remains high, even the more rapid economic growth increases non-agricultural employment by 215 percent, as against the required target of 281 percent. This means that about one-fifth of the additional labor force would be left over to swell the ranks of the unemployed or underemployed.

Balance between Demand and Supply and Terms of Trade

Our argument so far has been based on the assumption of balanced exchan and constant terms of trade between the two sectors. We may now see how the interrelations between demand and supply and the resulting terms of trade betwee the two sectors are likely to modify our argument.

The major factors affecting demand for agricultural products are population, income, and price ratio. Price ratio between farm and non-farm products is assumed to be constant in the first instance. Demand and population are assumed to change in direct and equal proportions, i.e., population elasticity is taken as unity. Using the National Sample Survey data, Professors Coale and Ho ver estimate an income elasticity coefficient of 0.8 for their demand projections. We adopt the same coefficient, but assume that it will decline after 1971 as an ex ponential function of income such that it is 0.6^{10} when per consumer income is twice the present level. The specific function used is:

$$\eta = e^{(-0.2231 - 0.2877y)}, \text{ where } y \text{ is the ratio between } \frac{Y}{C} \text{ and } \frac{Y_o}{C_o}$$

Estimated demand for farm products in 1986 is given below:

	Amount (in million rupees)[11]	Percent of Actual Production
I. Low Income Projection		
(a) High fertility	149,325	101.5
(b) Low fertility	140,019	94.8
II. High Income Projection		
(a) High fertility	172,975	117.6
(b) Low fertility	149,101	101.3

9. The possible increase in non-agricultural employment is obtained by the formula given in the footnote on page 212, adjusted for the change in non-farm to farm income ratio as follows:

$$\frac{E''}{E''_o} = \frac{Y''}{Y''_o} \times \frac{Y'_o}{Y'} \times \frac{2.68}{2.00}.$$

10. Japan shows an income elasticity of this order with per capita income a little over twice that of India.

11. At constant prices.

Estimated demand appears to be nearly in balance with agricultural production when low income projection is combined with high fertility or when rapid income growth goes with decline in fertility. When both income and population grow slowly, there arises a surplus of about 5 percent. A more severe imbalance arises when there is a rapid growth of both population and income, demand for farm products in this situation exceeding the supply by 18 percent.

In a closed economy the terms of trade would provide the chief mechanism for correcting the market imbalance, if there are no artificial controls. Necessary changes in the terms of trade would depend upon price elasticity of demand. In his model for developmental planning with reference to India, Professor Palvia gives a range of price-elasticity coefficients between .3 and .65.[12] With the lower coefficient, price ratio would ultimately rise 1.72 times in favor of agriculture to keep the balance when both population and income grow rapidly; with the higher coefficient, the needed rise would be 1.28 times. The limits of variation thus indicated are very wide, but in view of the dubious nature of any measure of price elasticity, it is difficult to lay down more precisely what would constitute equilibrium terms of trade. We may, however, be reasonably certain that in a "high food drain economy", any food shortage would alter the terms of trade substantially in favor of agriculture. This would increase the cost of food, raise money wages, even though real wages remain constant, cut into profits or surplus product, and retard capital accumulation and economic growth. This is the well-known Ricardian situation which ends up in the stationary state. In terms of the distribution of labor force such a situation would imply reduced capacity of the non-agricultural sector to offer employment and consequently increase in the pressure upon agriculture. It thus appears that while a rapid expansion of the non-agricultural sector is needed to provide employment to the rapidly growing labor force, it would set up in its way obstacles of its own creation and prove self-defeating in the end.

Conclusion

Our analysis suggests that fertility decline coupled with rapid economic growth would place Indian economy in a position to absorb in its non-agricultural sector within a period of three decades all the natural increase of labor force plus a fraction of the existing labor force. But when fertility remains constant and population grows rapidly, a substantial proportion of additional labor force would have to remain on the farm despite rapid economic development; at the same time there would be market imbalance which would alter the terms of trade against the non-agricultural sector and further reduce its employment capacity. It must, however, be admitted that our conclusions are subject to the restrictive nature of our assumptions. For example, if the assumption of closed economy is relaxed, reliance could be placed on importation of food, but this would complicate the foreign exchange position already burdened by the heavy demand for the import of capital equipment. Again, the terms of trade could be deliberately controlled and relative incomes altered in favor of the non-agricultural sector by state intervention. Or again, a more heroic policy of investment and increasing productivity could substantially increase the employment capacity of the non-agricultural sector. Any of these conditions might be introduced and might lead to a course of events different from those indicated by our analysis. It would, however, still be true that a decline in the rate of population growth would make it easier to secure balance in economic development by reducing both the need for additional employment and the demand for additional farm products.

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12. C. M. Palvia, An Econometric Model for Developmental Planning, 1953, pp. 31-32.

A POPULATION PROJECTION FOR INDIA, 1956 TO 1976*

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Introduction

The main object of this study is to furnish population projections for India up to 1976, without attempting any justification of particular assumptions regarding future mortality and fertility trends. But the need of alternative assumptions on these factors has been emphasized, and after a careful examination of the various assumptions, it was considered desirable to provide population projections on the basis of four sets of assumptions of fertility and mortality trends. These projections furnish the population of India up to 1976 in five-year intervals in five-year age groups for each sex, by the component method.

In order to obtain a valid estimate of future population, as distinguished from an illustrative model of merely academic interest, population projections should be based on realistic estimates of future trends in fertility and mortality rates. The lack of systematic and continuous investigation into age specific mortality and fertility in India, prevailing attitudes towards family planning, etc., make the formulation of valid assumptions about future trends of mortality and fertility rather a difficult task. Hence, a projection based mainly on the past is unlikely to be realized, because of continuous changes in the social and cultural attitudes of the people. The country is passing through rapid social and economic changes, and during such periods of transition it is difficult to assess their influence on the various demographic determinants and components. Under these circumstances, we can only project the population for a relatively short period for purposes of policy formulation.

A number of estimates of the future population of India by fitting mathematical curves to the series of past census data are available. But they are not satisfactory. Projections based on such functional relations may be realized in an immediate future, but for long-term projections they are of little use. Moreover, such estimates do not provide sex and age composition of the emerging populations. The component method used here, in addition to providing age and sex composition of the emerging population, also provides different sets of projected figures under different sets of assumptions about mortality and fertility. Long-range projections of the Indian population by the component method have

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been made by the Indian Statistical Institute and by Princeton University.[1] The Registrar General's population estimate given in the 1951 Census Report is based on "Surviving Population Rates" and "New Population Rates" and introduces the component method to some extent.

International Mortality and Fertility Trends

The components of population growth are mortality, fertility, and migration. The effect of net migration on population in India has not been appreciable in any period, and in the context of the present world situation is not likely to be of any importance in the future. Assuming that migration is negligible, population growth is primarily dependent upon fertility and mortality rates.

George J. Stolnitz summarizes in the following terms what has come to be known as the frame of reference of demographic transitions:[2]

1. Economic modernization and technological advance, on the one hand, and "Westernization", on the other, will reduce rather than raise fertility and mortality in today's underdeveloped areas.

2. The methods by which mortality may be lowered in these areas can be more rapidly and efficiently introduced than the process making for reduced fertility. Moreover, longer survival is everywhere accepted in principle as a major positive value, while departures from traditional high fertility patterns are often resisted as undesirable.

3. Accordingly, we may expect that mortality will decline more rapidly than fertility, at least for some time to come, resulting in an accelerated population growth.

A study of international mortality trends reveals the following important points which need careful consideration in making any assumptions regarding future mortality:

1. As a rule, increases in survival levels since the beginning of this century have been greater in those parts of the West where earlier levels were comparatively low.

2. Trends in life chances in non-western Europe have generally been much more rapid than movements in Western Europe at a comparable stage in its vital history.

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1. Ansley J. Coale and Edgar M. Hoover, Population Growth and Economic Development in Low-Income Countries, Princeton, 1958, pp. 29-74. The I.S.I. Projections by Ajit Das Gupta and Mazumdar give population in five-year intervals up to 2001 under different sets of assumptions (not yet published).

2. J. Stolnitz, "A Century of International Mortality Trends", Population Studies, Part I in Vol. 9, No. 1 (July 1955), pp. 17-42; and Part II in Vol. 10, No. 1 (March 1956), pp. 24-55.

3. A quantitative application of the concepts of demographic transition, if made by analogy to Western experience, is apt to be misleading as a guide to the mortality prospects confronting the underdeveloped world today. Prospects are that future changes in the world's high mortality areas will occur at a far more rapid pace than was true of the comparable movements in the West at earlier periods. Japan between 1920 and 1950 match changes in the West which generally took 40 to 50 years or more.

4. Mortality differentials tend to be less favorable to females in non-industri and industrializing parts of the world than in industrially advanced areas where female longevity almost always exceeds that of males.

5. The high degree of risk of death of persons under one year of age is not equalled until very old age is reached. In contrast to deaths at old ages, infant deaths, at least those taking place after one month of age, are more responsive to improvements of environment. Hence the infant mortality rate serves as one of the best indices to the general "healthiness" of a society. A United Nations Study on infant mortality revealed that it is affected largely by social customs of the people, such as mothers' care of their babies, knowledge of feeding, etc., while the mortality at ages one and above is largely affected by the level of living of the family.[3]

An analysis of international fertility trends reveals the following facts which should be carefully considered in any assumptions on future fertility:

1. The decline in the crude birth rate has been a characteristic feature of Western nations during the last 100 years, and this decline is mainly due to a decline in marital fertility.[4]

2. Though it is generally understood that increasing knowledge and availabili of birth control devices are mainly responsible for this fall in marital fer tility, one should go far deeper for tracing the effective causes. Propaga for family planning is not effective until the ground has been prepared thr social and economic changes.[5]

3. The decline in the birth rate, wherever it occured, usually began in urba areas and later spread to rural areas. It was first noticeable among the more educated and higher social and economic groups and later on spread to other groups.

4. Economic and social causes responsible for disseminating the small fam ily idea include among other factors (a) industrial development, (b) incre in per capita income, (c) extension of education, (d) improvement in the

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3. UN, ECAFE (Population Division), Foetal, Infant, and Early Childhood Mortality, 2 vol., Population Studies No. 13, New York, 1954.

4. UN, Population Division, The Determinants and Consequences of Popula tion Trends, New York, 1953, Ch. V, para. 17.

5. Ibid., para. 31.

status of women, (e) a growing sense of individualism, and (f) increased social mobility.

It may, however, be mentioned that in many cases birth rates have declined in the absence of many of these changes and that in other cases they have failed to decline when such factors were present.[6]

5. In countries in which the decrease in the birth rate appears late, it has occured at a rapid rate. While it took France over seventy years to record a drop in her birth rate from 30 to 20, the process took forty years in Sweden and Denmark; the birth rate has fallen in Bulgaria in nine years (1924 to 1933) from 40 to 29, in Poland from 35 to 26, and in Czechoslovakia from 26 to 19. While in 1922 and 1923 the birth rates of Central and Southern Europe were still at least as high as those of Western and Northern Europe in 1881-85, they had dropped by 1933 to the level obtaining in Western and Northern Europe in 1911.[7]

The switch-over to an urban industrial society was more rapid in Japan than in Europe, and so also was the demographic transition, inspite of Government action to offset the prospects of a declining population.[8]

In eighteenth- and nineteenth-century Europe, the decline in mortality and the consequent spurt of population growth were largely due to higher standards of living and better conditions of health. This decline could be continuously maintained because people were assured of a better food supply, and they could afford better housing, sanitation, and medical care. In the underdeveloped countries today, the same relation between mortality trends and economic conditions does not hold. Science has shown the way to bring down the death rate of an impoverished people quickly with only modest mobilization of resources and without major changes in the material conditions of living.[9]

This analysis tends to suggest that in the underdeveloped countries the prospect in the immediate future is a decline in mortality rather than increase in fertility. Where both birth rates and death rates are high, as is the case in most of the underdeveloped countries, the general expectation is that population growth results from a decline in mortality rather than from an increase in fertility (this at any rate seems valid for the immediate future). Kingsley Davis has pointed out that while it is possible today to reduce mortality through relatively simple means, without basic social change, such gains are insecure:

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6. UN, Population Division, "Gaps in Existing Knowledge of the Relationships between Population Trends and Economic and Social Conditions", Population Bulletin of the United Nations, No. 4 (15 December 1954), pp. 1-7.

7. R. R. Kuczynski, "The Decrease of Fertility", Economica, Vol. 2, No. 6 (May 1935), pp. 128-141.

8. Horace Belshaw, Population Growth and the Levels of Consumption, London, 1956.

9. UN, Population Division, The Determinants and Consequences of Population Trends, op. cit., Ch. V, para. 126.

> A population that remains ignorant of the rationale behind modern medicine, which does not comprehend personal and community sanitation, can hardly be counted on always to approve the science, the education, and the expenditure which maintain its rather remote medical authorities. Ultimately, then, the imposition of ingenious mortality control from the top down, without basic social changes among the masses, runs a strong risk of failure.[10]

The rapid decline in mortality that is expected in most underdeveloped countries would naturally have a greater effect in those age groups where the present mortality is rather high. Improvement in the mortality rate would therefore affect mainly children and infants, and also relatively old people who fall outside the reproductive age groups, as the present mortality rate among these groups are high. Even if fertility is unaffected, such a situation brings about an increase in population first, an immediate temporary reduction in the birth rate (because the total number of persons alive is increased without a proportionate increase in births), and subsequently a rise in the birth rate after a time lag, unless it is offset by a decline in the age specific fertility rates, when the young persons who have survived reach reproductive age. In view of these considerations, it is felt that it is not likely that the crude birth rate will increase in the immediate future.[11]

Assumptions Regarding Mortality Trends

Our assumptions regarding future mortality in India have been made after a careful consideration of international experience. Even if no further medical discoveries are made, the fact that the "wonder drugs" (sulpha drugs and other antibiotics) will be brought within the reach of millions of people may by itself account for a substantial decline in mortality rates. The Community Projects are already changing the countryside by improving sanitation, providing fresh water supplies, etc. The planned development of India's economy now in progress is likely to raise living standards of the people. The likely effect of all these factors would be a further reduction in mortality rates. But while considering the extent of mortality decline, we should take into account the fact that a vast majority of the people live in villages where the wonder drugs have not been known as yet; the relative poverty of the masses and the lack of general education would the wide use of these drugs in the immediate future rather unlikely on such a large scale as to have appreciable effect on mortality. These factors would naturally support the view that the decline in mortality is not likely to be very rapid for some time to come, and later the decline would be faster due to the

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10. Kingsley Davis, The Population of India and Pakistan, Princeton, 1951, pp. 51-52.

11. However, there are certain factors consequent on improvement of mortality which tend to raise fertility. "Improved health can increase the fraction married by decreasing incidence of widowhood and can increase marital fertility by increasing cohabitation rates and reducing stillbirths and miscarriages. These factors could easily offset the declines in the proportion of women in child-bearing ages." (Coale and Hoover, op. cit. p. 60.)

combined effect of factors such as improved nutrition, levels of living, widespread use of wonder drugs, etc.[12]

Three sets of assumptions on mortality readily suggest themselves. According to assumption I, there will be no further declines in mortality until 1976. As this is unlikely to happen, this has not been considered. According to assumptions II and III, mortality declines, the decline starting from the end of the very first quinquennium. But under assumption II, mortality declines at a more rapid rate than under assumption III.

Expectation of life at birth in India according to 1941-50 life tables is 32.5 years for males and 31.7 years for females. Infant mortality rates, according to the same life tables, are 190 and 175 per thousand live births for males and females, respectively. It is assumed that Indian mortality experience will be similar to that of other countries which have utilized modern low-cost public health techniques with similar disease problems. The pattern of decline in mortality assumed for India was adopted after a careful study of mortality trends and mortality experience in different countries which had high mortality in the recent past, comparable to India, and in which reliable statistics are available, especially Italy and the U.S.S.R. in Europe, Japan and Ceylon in Asia, and Puerto Rico in the West Indies.

According to assumption II, the decline in mortality will be substantial by 1976, as it is assumed that by that time all possible reduction in mortality that could be achieved by the intensive use of wonder drugs and of relatively cheap public health measures would have yielded results, and further improvements would largely depend upon improved nutrition and a rise in the standards of living. According to assumption II, during the 25 years ending in 1976, the expectation of life for males at birth would increase to 55.3 years, and the expectation of life for females at birth would increase to 56.3 years. Both male and female infant mortality would decline by 55 and 52 percent, respectively. Both male and female child mortality rates would decline by 60 percent.

According to assumption III, the mortality is expected to decline only moderately by 1976, compared with assumption II. This assumption is based on the view that improvements in mortality until about 1976, resulting from use of cheap drugs and general public health measures, are unlikely to be substantial, due to their limited effect on account of the poverty and ignorance of the rural masses. The cumulative effect of such factors as improved nutrition and intensive use of sulpha drugs, antibiotics, etc., will then follow, bringing about a substantial decline in mortality after 1976. According to assumption III, dur- the 25 years ending in 1976, the expectation of life of males at birth would show

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12. "The scope for reduction of the death rate is indicated by the actual rate in a number of countries which is nearly one-third of the rate in this country, which is among the highest in the world. The reduction of that order cannot be achieved merely by public health measures--preventive or curative--for the death rate of a country is really a function of its whole standard of life--its standard of nutrition, of personal and social hygiene, of social conscience and the general culture of the people as a whole." Gyan Chand, Some Aspects of the Population Problem of India, Bannailli Readership Lectures, Bihar, Patna University, 1956.

an increase to 49.5 years, and the expectation of life of females at birth would increase to 50 years. Infant mortality of males and females would decline by 42 and 43 percent respectively. Both male and female child mortality would decline by 50 percent.

Assumptions regarding Future Fertility Trends

In the All-India Life Tables 1941-50, we have a natural mortality base. But there are many difficulties in constructing an adequate fertility base. No schedule of age-specific fertility rates for all of India is available. The general fertility rate (G.F.R., defined as the ratio of total births during a year to the mean female population in child-bearing ages, 15-49) is rather crude, though it is much more sensitive than the crude birth rate (C.B.R.). The G.F.R. is subject to changes in the age composition of women within the child-bearing ages, 15-49. Changes in the age composition of the emerging population may have an appreciable effect on the number of births, since births are usually more frequent among women aged 20-34, and the effect is greater when the emerging population is subject to changes in the age at marriage and other cultural and social changes resulting in improvements in the status of women. The use of age-specific fertility rates would be more accurate in reflecting future births.

After a careful examination of the fertility rates revealed by the various sample studies carried out in India, it was thought reasonable to assume an All-India G.F.R. of .177, corresponding to a C.B.R. of 43.0 per 1000.[13] From this the corresponding base (1951) age-specific fertility rates have been obtained

In the West, as a result of the impact of certain cultural and economic forces, birth rates, which at one time were high and fairly constant, have fallen to much lower levels. It cannot, however, be predicted whether in this country such a fall will occur in the near or remote future and whether if it occurs it will be only gradual or precipitous. As the various fertility studies clearly show, the experience has been far too varied in India to permit any general conclusions to be drawn. Hence we must make alternative assumptions with regard to future fertility trends viz. high, medium, and low levels. As in mortality, three alternative sets of assumptions about future fertility readily suggest themselves. Under assumption A (high) there will be assumed no change in the age-specific fertility rates. This is not likely, and even if it were to occur, such a situation may not continue for long and hence is not considered for projection. Under assumption B (medium) the 1951 age-specific fertility rates would continue up to the year 1966 and are assumed to decline thereafter, the decline being at a rather rapid rate.[14] Under assumption C (low) the decline in age-specific fertility rates is assumed to start in the very first quinquennium, though the rate of decline is rather slow as compared to assumption B.

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13. S. P. Jain; the 1951 Census actually estimated the C.B.R. as 39.9 per 1000 for the decade 1941-50.

14. "However, once birth rates start declining they fall about as rapidly as do the death rates. Here again, the diffusion of knowledge and the assimilation of new techniques into the culture require a generation or two". Harrison Brown, The Challenge of Man's Future, New York, 1954.

Under Assumptions B and C, the G.F.R. declines from .177 in 1951 to .142 and .133 by the year 1976, thus recording a decline of 20 percent and 25 percent, respectively. On this assumption, the corresponding age-specific fertility rates for the year 1976 have been obtained. The age-specific fertility rates for the intermediate five-year intervals are obtained from the base (1951) and ultimate (1976) values by simple interpolation. Table I gives the 1951 and 1976 age-specific fertility rates for women in quinquennial age groups.

Table I. Age-Specific Fertility Rates

Age group	1951	1976	
		Assumption B	Assumption C
15-19	.124	.085	.079
20-24	.261	.217	.204
25-29	.270	.233	.219
30-34	.210	.188	.177
35-39	.160	.128	.120
40-44	.078	.041	.038
45-49	.032	-	-
Total	1.135	0.892	0.837
G.F.R.	.177	.142	.133

Results

A detailed exposition of the implications of the various demographic trends that emerge from our different sets of assumptions is beyond the scope of this paper. But a brief account of the structure of the emerging population pattern is attempted. Four sets of assumptions are made with regard to mortality and fertility trends, on the basis of which projections are made. Table II gives the projected population figures (sex-wise) in five-year age groups at five-year intervals under the four sets of assumptions. Table III presents the same data under broad age groups, together with the population sex ratio, birth and death rates, general fertility rates, and dependency ratios.

While discussing the age structure of the emerging population under different sets of assumptions, the working population is taken as that in the age group 15-64, and the persons falling outside this age group are taken as dependents. The dependency ratio has been defined as the ratio of dependents to workers with a view to measuring the economic efficiency of the age structure. While studying the effects of mortality and fertility factors on the age structure of the emerging population, the fact that the proportion of the population comprising the survivors of those already born in 1951 differ from year to year (the extent of this relation declining with time) has to be kept in mind. The population aged 15 and over in 1966 and those 25 and over in 1976 are the survivors of the population in 1951, and accordingly, the size of these groups is dependent upon mortality assumptions only.

Table II. All-India Population (excluding Jammu and Kashmir) Four Projections--IIB, IIC, IIIB, IIIC

Age group	1951	1956				1961			
		IIB	IIC	IIIB	IIIC	IIB	IIC	IIIB	IIIC
Males									
0- 4	27.9	32.3	31.5	31.9	31.1	35.5	32.8	35.0	32.3
5- 9	23.1	25.0		25.0		29.5	28.8	29.0	28.3
10-14	20.4	21.8		21.8		23.9		23.9	
15-19	18.3	19.5		19.4		20.9		21.0	
20-24	16.5	17.5		17.4		18.8		18.6	
25-29	14.8	15.7		15.6		16.7		16.6	
30-34	13.1	13.9		13.9		14.9		14.8	
35-39	11.4	12.2		12.2		13.1		13.0	
40-44	9.8	10.5		10.4		11.4		11.3	
45-49	8.2	8.8		8.8		9.6		9.4	
50-54	6.7	7.1		7.1		7.8		7.8	
55-59	5.1	5.6		5.5		6.0		6.0	
60-64	3.6	4.0		3.9		4.5		4.4	
65-69	2.4	2.5		2.5		2.9		2.8	
70+	2.3	2.5		2.4		2.7		2.5	
Total	183.6	198.9	198.1	197.8	197.0	218.2	214.8	216.1	212.7
Females									
0- 4	26.4	30.6	29.8	30.3	29.5	33.7	31.1	33.1	30.6
5- 9	21.8	23.2		23.1		27.5	26.8	27.0	26.3
10-14	19.2	20.5		20.5		22.1		22.0	
15-19	17.4	18.5		18.5		19.8		19.8	
20-24	15.8	16.8		16.8		17.9		17.9	
25-29	14.2	15.0		15.0		16.1		16.1	
30-34	12.4	13.2		13.2		14.2		14.1	
35-39	10.6	11.3		11.3		12.2		12.2	
40-44	8.9	9.6		9.6		10.4		10.3	
45-49	7.4	7.9		7.9		8.7		8.5	
50-54	6.0	6.5		6.4		7.0		7.0	
55-59	4.7	5.1		5.1		5.6		5.5	
60-64	3.5	3.8		3.8		4.2		4.2	
65-69	2.4	2.6		2.6		2.9		2.9	
70+	2.6	2.9		2.8		3.2		3.0	
Total	173.3	187.5	186.7	186.8	186.0	205.5	202.2	203.6	200.4
Total Both Sexes	356.9	386.4	384.8	384.6	383.0	423.7	417.0	419.7	413.1

Note: Projected figures for certain age groups for different years under fertility assumption C have not been given in the table above, as fertility factor has no effect on these age groups, since they are the survivors of those living in 1951. These may be taken as the same as under fertility assumption B under the corresponding mortality assumption, i.e., projected figures for age groups 5-9 and above in 1956 under assumption IIC are the same as those in IIB.

in Five-Year Age Groups at Five-Year Intervals According to and IIIC (Figures in Millions)

1966				1971				1976			
IIB	IIC	IIIB	IIIC	IIB	IIC	IIIB	IIIC	IIB	IIC	IIIB	IIIC
38.2	34.5	37.1	33.5	40.0	36.7	38.3	35.1	42.9	39.4	40.7	37.5
33.0	30.5	32.3	29.8	36.2	32.7	34.8	31.5	38.6	35.4	36.5	33.4
28.5	27.8	28.0	27.3	32.2	29.7	31.5	29.1	35.7	32.2	34.2	31.0
23.2		23.2		27.8	27.2	27.4	26.7	31.7	29.3	30.9	28.6
20.2		20.2		22.6		22.5		27.3	26.7	26.7	26.0
18.1		17.8		19.6		19.5		22.1		21.8	
16.0		15.8		17.5		17.1		19.1		18.9	
14.2		14.0		15.4		15.1		17.0		16.5	
12.4		12.2		13.6		13.2		14.9		14.4	
10.6		10.4		11.7		11.4		13.1		12.4	
8.7		8.4		9.8		9.4		11.0		10.5	
6.8		6.7		7.8		7.4		9.0		8.4	
5.0		4.9		5.8		5.6		6.8		6.3	
3.4		3.3		4.0		3.8		4.8		4.4	
3.2		2.8		3.9		3.2		4.8		3.7	
241.5	234.6	237.1	230.3	267.9	258.0	260.2	250.6	298.8	285.6	286.3	273.8
36.2	32.8	35.2	31.8	38.0	34.8	36.4	33.3	40.8	37.5	38.8	35.7
31.0	28.6	30.1	27.8	34.0	30.8	32.6	29.5	36.5	33.4	34.3	31.4
26.5	25.8	26.0	25.4	30.2	27.9	29.3	27.1	33.5	30.3	32.0	29.0
21.5		21.4		26.0	25.3	25.5	24.9	29.8	27.5	28.8	26.7
19.3		19.2		21.0		20.9		25.5	24.9	24.9	24.4
17.3		17.2		18.8		18.5		20.6		20.3	
15.4		15.2		16.7		16.4		18.3		17.8	
13.4		13.2		14.7		14.4		16.2		15.7	
11.4		11.3		12.7		12.3		14.2		13.7	
9.6		9.4		10.7		10.4		12.2		11.6	
7.9		7.6		8.9		8.6		10.1		9.7	
6.2		6.1		7.2		6.7		8.3		7.9	
4.8		4.6		5.4		5.2		6.5		5.9	
3.3		3.3		4.0		3.7		4.6		4.3	
3.7		3.3		4.4		3.7		5.4		4.2	
227.5	221.0	223.1	216.8	252.7	243.3	244.6	235.6	282.5	270.0	269.9	258.3
469.0	455.6	460.2	447.1	520.6	501.3	504.8	486.2	581.3	555.6	556.2	532.1

Table III. All-India Population (excluding Jammu and Kashmir) by Ratio, Birth and Death Rates, General Fertility Rates, and Dependency Ratio,

Age groups	1951	1956 IIB	1956 IIC	1956 IIIB	1956 IIIC	1961 IIB	1961 IIC	1961 IIIB	1961 IIIC
Both sexes:									
0- 4	54.3	62.9	61.3	62.2	60.6	69.2	63.9	68.1	62.
% to Total	15.2	16.3	15.9	16.2	15.8	16.3	15.3	16.2	15.
5-14	84.5	90.5	90.5	90.4	90.4	103.0	101.6	101.9	100.
% to Total	23.7	23.4	23.5	23.5	23.6	24.3	24.4	24.3	24.
15-49	178.8	190.4	190.4	189.9	189.9	204.7	204.7	203.6	203.
% to Total	50.1	49.3	49.3	49.4	49.6	48.3	49.1	48.5	49.
50-64	29.6	32.1	32.1	31.8	31.8	35.1	35.1	34.9	34.
% to Total	8.3	8.3	8.4	8.2	8.3	8.3	8.4	8.3	8.
65+	9.7	10.5	10.5	10.3	10.3	11.7	11.7	11.2	11.
% to Total	2.7	2.7	2.7	2.7	2.7	2.8	2.8	2.7	2.
Total	356.9	386.4	384.8	384.6	383.0	423.7	417.0	419.7	413.
Other particulars									
1. Sex ratio[1]	105.9	106.1	106.1	105.9	105.9	106.2	106.2	106.1	106.
2. Birth rate[2]	-	42.8	41.8	42.9	41.9	41.9	39.1	42.2	39.
3. Death rate[2]	-	26.9	26.7	27.9	27.8	23.5	23.1	24.8	24.
4. Natural increase rate[2]	-	15.9	15.1	15.0	14.1	18.4	16.0	17.4	15.
5. General fertility rate[2]	-	.177	.173	.177	.173	.177	.164	.177	.
6. Dependency ratio	.713	.737	.729	.735	.728	.767	.739	.760	.

1. Sex ratio = number of males for every 100 females.
2. These rates are for the quinquennium ending in the given year.

Broad Age Groups, for Both Sexes Taken Together, along with Sex According to Four Projections (IIB, IIC, IIIB, IIIC), Figures in Millions

1966				1971				1976			
IIB	IIC	IIIB	IIIC	IIB	IIC	IIIB	IIIC	IIB	IIC	IIIB	IIIC
74.4	67.3	72.3	65.3	78.0	71.5	74.7	68.4	83.7	76.9	79.5	73.2
15.9	14.8	15.7	14.6	15.0	14.3	14.8	14.1	14.4	13.9	14.3	13.8
119.0	112.7	116.4	110.3	132.6	121.1	128.2	117.2	144.3	131.3	137.0	124.8
25.4	24.7	25.3	24.7	25.5	24.1	25.4	24.1	24.8	23.6	24.6	23.4
222.6	222.6	220.5	220.5	248.8	247.5	244.6	243.3	282.0	276.1	274.4	268.8
47.4	48.9	47.9	49.3	47.8	49.4	48.5	50.0	48.5	49.7	49.3	50.5
39.4	39.4	38.3	38.3	44.9	44.9	42.9	42.9	51.7	51.7	48.7	48.7
8.4	8.6	8.3	8.6	8.6	9.0	8.5	8.8	8.9	9.3	8.8	9.2
13.6	13.6	12.7	12.7	16.3	16.3	14.4	14.4	19.6	19.6	16.6	16.6
2.9	3.0	2.8	2.8	3.1	3.2	2.8	3.0	3.4	3.5	3.0	3.1
469.0	455.6	460.2	447.1	520.6	501.3	504.8	486.2	581.3	555.6	556.2	532.1
106.2	106.2	106.3	106.2	106.0	106.0	106.4	106.4	105.8	105.8	106.1	106.0
39.5	36.6	40.0	37.0	36.2	34.3	36.8	34.9	33.8	32.4	34.5	33.1
19.2	18.9	21.6	21.2	15.4	15.2	18.3	18.1	11.8	11.6	15.1	15.0
20.3	17.7	18.4	15.8	20.8	19.1	18.5	16.8	22.0	20.8	19.4	18.1
.170	.154	.171	.154	.157	.144	.157	.145	.145	.135	.145	.136
.790	.739	.778	.728	.773	.714	.756	.699	.742	.695	.722	.676

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Projection IIB--Rapid Mortality Decline and Delayed Fertility Decline (20 percent 1966-76)

Under this assumption, mortality declines rapidly during 1951-76. During the 25 years ending with 1976, expectation of life at birth for males would increase to 55.3 years and that for females to 56.3 years. Male and female infant mortality would decline by 55 percent and 52 percent, respectively. Both male and female child mortality would decline by 60 percent. Age-specific fertility rates decline so that by 1976 the G.F.R. declines by 20 percent, this decline starting in the year 1966.

Under this projection, the total population of India increases by 1976 to 581.3 million, registering a growth of 63 percent over the 1951 population. The population in the age group 0-4 increases by 54 percent, in the age group 5-14 by 71 percent, in the age group 15-49 by 58 percent, while the rates of increase in the age groups 50-64 and 65 and over are 75 percent and 102 percent, respectively. As regards the population proportions in the various age groups, we notice a decrease of 0.8 percent in the 0-4 age group, an increase of 1.1 percent in the age group 5-14, a decrease of 1.6 percent in the 15-49 age group, and increases of 0.6 and 0.7 percent in the age groups 50-64 and 65 and over. As a consequence of these trends in the different age groups, the dependency ratio gradually increases from .713 in 1951 to .773 in 1971 and then declines to .742 in 1976. This projection (IIB) provides an upper limit for future population in India.

Projection IIC--Rapid Mortality Decline and Decline in Fertility by 25 percent, 1951-76

The mortality assumption is the same as in IIB, but age-specific fertility is assumed to decrease in such a way that by 1976 the G.F.R. declines by 25 percent, the decline starting in the very first quinquennium (1951-56).

Under this projection the total population of India goes up to 555.6 million by 1976, showing an increase of 56 percent. The population increases in the age group 0-4 by 42 percent, in the age group 5-14 by 55 percent, in the age group 15-49 by 54 percent, and in the age groups 50-64 and 65 and over, the rates of increase are the same as in projection IIB. As regards population proportions in the various age groups, we notice a decrease of 1.3 percent in 0-4 age group, a decrease of 0.1 percent in the age group 5-14, a decrease of 0.4 percent in the age group 15-49, and increases of 1.0 and 0.8 percent in the age groups 50-64 and 65 and over. As a result of these trends in the different age groups, the dependency ratio initially rises up to 1961 and ultimately declines to .695 by 1976.

Projection IIIB--Moderately Rapid Mortality Decline and Delayed Fertility Decline (20 percent, 1966-76)

Under this assumption, mortality declines moderately rapidly during 1951-76. During the 25 years ending 1976, the expectation of life at birth for males would increase to 49.5 years and that for females to 50.0 years. Male and female infant mortality would decline by 42 percent and 43 percent, respectively. Both male and female child mortality would decline by 50 percent. The fertility assumption is the same as under IIB.

Under this projection the total population of India would rise to 556.2 millions, an increase of 56 percent over the 1951 population. The same trends as in IIB in the changes of the population of different age groups are present, but the rates of increase are lower in all age groups due to the assumption of moderate mortality declines. The population proportions in the various age groups remain more or less the same as in IIB. The trend in the dependency ratio is also similar to IIB, except that the rate of decrease is greater, with the result that the ultimate level of the dependency ratio is smaller.

Projection IIIC--Moderately Rapid Mortality Decline and Decline in Fertility (25 percent, 1951-76)

The mortality assumption is the same as in IIIB, and the fertility assumption is the same as in IIC.

Under this projection the total population of India increases to 532.1 millions, showing an increase of 49 percent over the 1951 population. The same trend is present as in IIC in changes of the age distribution of the population, but the rates of increase are lower in all the age groups due to the assumption of moderate mortality declines. The population proportions in the various age groups remain more or less the same as in IIC. The trend in the dependency ratio is also similar to that of IIC, except that the rate of decrease is greater with the result that the ultimate level of the dependency ratio is smaller. The projection IIIC provides a lower limit for the future population of India.

From the study of trends of population under different sets of assumptions the following conclusions emerge:

1. Unchanged fertility but declining mortality increases the proportion of the child population.

2. Declining fertility and mortality produces a transition towards the aging of the population.

3. With given fertility assumptions, the lower the mortality assumptions the higher the number of survivors at different ages, but the proportion of the population in different age groups remains more or less constant.

4. With given mortality assumptions, the number of persons in the working age group shows a faster growth in the latter part of the period under medium fertility assumptions than under low fertility assumptions.

5. With given mortality assumptions, the lower the fertility assumption the more "efficient" is the age structure of the emerging population.

6. Any reduction in mortality trends tends ultimately to increase the population at old ages more than at younger ages because general improvements at the different age levels have a cumulative effect, since the number of survivors in the older ages reflect not only a reduction in mortality in the older but also in the younger age levels.

7. The effect of fertility on the age structure of the population is stronger than that of mortality.

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THE POPULATION PUZZLE IN INDIA

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This paper proposes to examine critically some of the conflicting viewpoints on the population problem of India.

In India, writers on the population problem long debated whether India was overpopulated or not; they discussed the morality and immorality of birth control; they denounced British rule and dreamt of potential plenty. Much of this discussion, however useful in its own time, is obsolete today. But most modern writers on the subject view the problem through western eyes and tacitly assume that history will repeat itself, that India will undergo a similar process of industrialization and urbanization to the West's of the last century. There is no doubt that this approach too will soon become obsolete.

In most discussions on the population problem of India, the following questions are generally posed: (a) Is the problem "Malthusian" or "Marxian" in nature? (b) Is our low level of living the result of overpopulation or underdevelopment? (c) Is industrialization a solution of the population problem? (d) Will India undergo the same type of demographic cycle which the countries of Western Europe, North America, and to some extent, Japan underwent? (e) Is family planning desirable and possible in India?

The population problem in India is truly a puzzle. In this brief paper, justice cannot be done to all the issues raised, but I will be satisfied if I succeed in giving a glimpse of the wide areas of disagreement on this important question.

Malthus or Marx?

William Vogt is a Neo-Malthusian. Rajani Palme Dutt is a Marxist. Both are alike in lamenting India's poverty. "In all the world", says Vogt,[1] "there is probably no region of greater misery and almost certainly none with less hope" as India. And Dutt says: "India presents a spectacle of squalid poverty and misery of the mass of the people without equal in the world."[2]

But Vogt and Dutt are poles apart in their diagnosis of our poverty. Vogt maintains that "Mother India is the victim of her own awful fecundity."[3] Dutt believes that "What makes the decisive difference between the conditions of India and Europe is that the economic development and extension of production which

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1. William Vogt, Road to Survival, 1948, p. 226.

2. Rajani Palme Dutt, India To-day, 1949, p. 11.

3. Vogt, op. cit., p. 226.

have taken place in the European countries and have facilitated a more rapid growth of population have not taken place in India, and have been artifically arrested by the workings and requirements of British capitalism, driving an increasing proportion of the population into dependence on a primitive and over-burdened agriculture."[4]

But poverty cannot be explained away so easily. The cause-and-effect relationship fails in the analysis of poverty. An untold number of factors, myriad forces, political, economic, and social, bring about poverty on earth. Can Vogt prove that given the British rule and a colonial economy, India would have prospered if only the rate of population growth were slower? Dutt, on the other hand, ignores the fact that in any country, be it under foreign domination or not, uncontrolled fertility cannot get along with controlled mortality without creating serious problems. Further, the improvement in the level of living in the Western countries in the last century was not the sole gift of the Industrial Revolution: birth rates fell rapidly and continuously, and there were mass emigrations to the New World.

Malthus and Marx cannot be considered in isolation, for they co-exist in India. Our poverty is the result of both uncontrolled fertility and arrested economic development.

Overpopulation or Underdevelopment?

This controversy is a corollary to the "Malthus or Marx" controversy.

Fairfield Osborn asserts that overpopulation is the cause of India's poverty. He says: "The internal enemy is the same--too many people for the land to support. India's land has long ago been depleted, yet her population continues to increase... India's wasted land will not support such a pressure of population, but the immoderate increase goes on, weakening lands and people, rendering them helpless in the struggle to keep alive upon the earth. Here is the extreme present-day example of man, ever increasing in numbers, ruining himself and the earth on which and by which he must live."[5]

On the other hand, the Famine Inquiry Commission appointed by the Government of India in 1945 says in its report: "While we hold that there is a serious population situation, we emphasize throughout that the primary problem is that of underdevelopment of resources, both agricultural and industrial, in the wide sense of the term."[6]

Osborn is right when he says that there are too many people for the land to support, or that the pressure of population on the land is great, but he overlooks the fact that this is so not merely because population is increasing, but also because

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4. Dutt, op. cit., p. 57..

5. Fairfield Osborn, Our Plundered Planet, 1948, pp. 99-110.

6. Government of India, Final Report of the Famine Inquiry Commission, New Delhi, 1945, p. 73.

of the failure of our economy to develop and to absorb the surplus population in agriculture. In most countries of the world, the population is increasing, while the land area remains the same. It does not follow from this that the people are getting poorer and poorer. On the contrary, their level of living has risen. This is because agriculture has been modernized, industries have been started, foreign trade has increased, or in short, the economy has developed. As we shall see presently, India's economy has remained more or less stagnant for several decades.

Let us consider a few facts and figures which are vital to the understanding of the population problem in India. [7]

India ranks second in the world's population and seventh in land area. She occupies 2.2% of the total land area and supports 15% of the world's population. This indicates a high pressure of population on land. Considering the agricultural economy of the country, the density of population in India must be regarded as very high. China, for example, has an estimated density of 123 persons per square mile, compared to India's 312 persons per square mile.

Though the rate of growth of population in India is not very high, the net increase in population every year is considerable. In the decade 1941-51, the population increased by 42 million--roughly the population of France. Every year a population equivalent to that of Denmark is added to our population. This gives an idea of the magnitude of the quantitative aspect of the problem facing us.

The importance of agriculture in our national economy can be judged from the fact that in 1950-51, 50.2% of the national income was derived from agriculture, while only 5.8% of our national income was derived from factory establishments. [8] We depend on agriculture for our food supply, for raw materials for industry, and for our export trade. But agriculture is not paying. According to the estimate of the National Income Committee, in 1950-51 the net output per economically active person was only Rs. 500 in agriculture, Rs. 1,700 in mining and factory establishments, Rs. 1,600 in railways and communications, and Rs. 1,500 in banking, insurance, and other commerce and transport. [9]

In India, barring domestic service, agriculture is the least remunerative of all occupations. And 249 million or 70% of the people of India depend upon agriculture for their livelihood. The percentage of agricultural population is much the same as it was fifty years ago.

The National Income Committee estimated the working force in India (based on census data) and the national income by industrial origin in 1950-51 as shown in Table I.

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7. The statistics unless otherwise mentioned relate to the present territory of India, excluding the State of Jammu and Kashmir, where the 1951 Census was not taken.

8. Government of India, Ministry of Finance, Final Report of the National Income Committee, New Delhi, 1954.

9. Ibid., p. 108.

Table I. Percentage Share of Working Force and National Income in India,* 1950-51, by occupation

Occupation	Population in millions	% of total working force	Net output (in millions of rupees)	% of total output
1. Agriculture, including forestry and fishery	103.64	72.4	48,900	51.3
2. Mining, manufacturing, and hand trades	15.27	10.6	15,300	16.1
3. Commerce, transport, and communications	11.05	7.7	16,900	17.7
4. Services	13.26	9.3	14,400	15.1
Total	143.22	100.0	95,500+	100.2+

* The figures relate to India inclusive of the State of Jammu and Kashmir.
\+ This includes Rs. 200 million which represent the net earned income from abroad or 0.2 percent of the total output.

Source: Government of India, Ministry of Finance, op. cit., computed from Table 5, p. 23, and Table 28, p. 106.

There is chronic underemployment in agriculture. It has been estimated that in India, 31 million persons are underemployed in agriculture for seven months.[10] Large-scale industries which employ about 3 million workers have failed to absorb surplus labor from agriculture. So the already high pressure of population on land is continually increasing, the per capita land area is decreasing, an increasing number of people are working on the same area of cultivated land, and non-earning dependency is on the increase. The situation has worsened since 1921, as Table II shows.

Mr. R. A. Gopalaswami, the 1951 Census Commissioner, has made an excellent study of the "population-land-food problem" in his report on the 1951 census. I can do no better than to quote him at some length. He says: "In relation to the natural resources available for the production of food, India is even more heavily overpopulated than Europe. Europe (which is the most densely population continent in the world) is less densely population than India. The average European has more land per capita than the average Indian... The average European has brought only 30 percent of his land under the plough. The average Indian, on the other hand, has brought under the plough 43 percent of his land even though it has a far larger proportion of thin and poor soils and a less adequate and a less evenly distributed rainfall."[11]

10. B. N. Datar, "The Second Five Year Plan--Employment Approach", in Government of India, Planning Commission, Papers Relating to the Formulation of the Second Five Year Plan, New Delhi, 1955, p. 251.

11. Census of India, New Delhi, 1951, Vol. I, Pt. I-A, pp. 37-39.

Table II. Decline in Cultivation Relative to Growth of Population*

	1921 in millions	1951 in millions	Percentage increase over 1921
Population	83.3	117.9	41.4
Cultivated land (acres)	92.7	99.1	7.0
Irrigated area (acres)	15.2	16.9	11.2
Double-cropped area (acres)	10.9	12.5	14.6

* The population relates to the area for which good quality comparable agricultural statistics were available.

Source: Government of India, Ministry of Labour, Report on Intensive Survey of Agricultural Labour, New Delhi, 1955, Vol. 1, p. 13.

It is often supposed that if India could have European standards of farming her food problem would be solved. But Mr. Gopalaswami thinks differently. He says: "Even in the absence of any difference in farming efficiency, Europe can produce more plant food per capita than India because much the same area of arable land per capita is available in Europe as in India but with more favourable rainfall and social conditions. In addition, Europe has got more permanent meadows and pastures which must provide a supply of milk, milk products, beef, mutton and other food stuffs of animal origin--for which there can be no parallel in India."[12]

A study of land utilization in India does not confirm the belief that we have vast undeveloped agricultural resources. This, however, should not be taken to mean that we have no scope for improvement of agriculture. With better irrigation facilities and improved techniques of farming, agricultural production can be raised considerably. During the first five year plan period (1950-51 to 1955-56), over 6 million acres of land were brought under irrigation through major works, while another 10 million acres benefitted through smaller works.[13] By the end of the plan period, the index of agricultural production was 19 percent higher compared to the beginning of the period.[14] But a substantial increase in agricultural productivity calls for a large amount of capital investment. A high rate of investment is not possible without a high rate of saving (unless the capital is imported), and the savings must necessarily be low when the level of living is very poor and almost the entire income is spent on consumption.

Not only the high rate of growth of population but also the age structure of the population of India is detrimental to a high rate of capital formation. A high rate of dependency and a preponderance of children characterize our population. In India, on an average, 1,000 self-supporting persons support by their own exertions themselves as well as 2,504 others. In the U.S., the corresponding

12. Census of India, op. cit., Vol. I, Pt. I-A, p. 38.

13. Second Five Year Plan, New Delhi, 1956, p. 2.

14. Review of the First Five Year Plan, New Delhi, 1957, p. 5.

figure is 1,547 and in Great Britain 1,207.[15] Part of the difference is due to the high proportion of infants in India's population and part to the greater extent of unemployment and underemployment. Hence, even if the number of persons under 14 is excluded, the burden of dependency is still heavier in India than in the U.S. or Great Britain. In India, 38.3 percent of the population is under 15 years of age, while the corresponding percentage in the U.S. is 27.1.[16]

The high mortality rate, especially the infant and child mortality rate, involves a heavy drain on our resources. A great deal of expenditure is incurred on children who die before they reach the reproductive age. A peculiar feature of the Indian Life Table is that the expectation of life at age 20 exceeds that at birth. Males who attain the age of 21 or females who attain the age 22 may, on the average, expect to life as long as a new born child.[17]

Eugene Staley estimates that "the total number of productive years for each 100 live births is approximately 4,750 in the United States and 1,650 in India". Thus, "it takes almost three times as many births in India as in the United States to provide a given number of productive adult years."[18]

Thus, the present reproductive pattern in India is wasteful, uneconomic, and highly inimical to the health and wealth of the nation. Further, the size, density, rate of growth, and age structure of the population are all unfavorable to economic progress. Our land is limited, capital is scarce, and organization is inefficient. Vast natural and human resources in themselves cannot bring a about economic progress: they can only sustain a primitive economy. And that is what is actually happening in India.

Rapid Industrialization

According to many writers, industrialization is the only remedy for the population problem in countries like India, since emigration (if at all possible) cannot substantially help in reducing the pressure of population, and since birth control measures are extremely difficult to enforce. Colin Clark, for example, denounces the advocates of birth control and maintains that large and densely population countries like India "have reached the stage where industrialisation is obviously their only suitable prospect of economic advancement."[19]

On the other hand, the 1951 Census Superintendent of the State of Madhya Pradesh says in his report, "That industrialisation will bring about a millenium

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15. Census of India, op. cit., Vol. I, Part I-A, p. 119.

16. Ibid., p. 68.

17. Census of India, op. cit., Paper No. 2, New Delhi, 1954, Life Tables, p. 22.

18. Eugene Staley, The Future of Underdeveloped Countries, 1954, footnote on p. 280.

19. Colin Clark, "Population Growth and Living Standards", International Labour Review, August 1957, p. 19.

in India is, therefore, an extremely doubtful proposition...In other words, the hope of rapid increase in the standard of living as a result of industrial developments and consequent automatic reduction in fertility might not be fulfilled. On the other hand, the fast growth rate would damp all efforts to improve the economic status of the people and, therefore, it might be wise to take a more comprehensive view of the problem and to plan for population control side by side with the industrial and agricultural developments."[20]

Gopalaswami also holds the view that "industrialisation is not the answer to the food problem; the widespread belief to the contrary is a fallacy based on a misreading of history." He refutes the argument that India, like Great Britain, can industrialize and export manufactured goods and import food. He thinks that the case of Great Britain indicates "an exceptional phase of human history" and "it seems most unlikely that any other country with a larger and growing population will develop in that way hereafter." And it is also unlikely that "the food exporting countries of the world will increase agricultural productivity at a faster rate than their own rate of growth of population and produce increasing surpluses to match increasing deficits of India and Europe."[21]

Nobody will doubt the supreme necessity of rapid industrialization in densely populated underdeveloped countries like India. But is rapid industrialization an alternative to a policy of population control? And is rapid industrialization possible without population control?

Let us consider if industrialization can, without the help of a direct policy of population control, solve the population problem. Those who think it can base their argument on the following two considerations: first, it has been observed that one of the essential conditions of economic progress is a shift of population from the primary sector of the economy to the secondary and the tertiary sectors. Rapid industrialization will not only absorb the surplus population in agriculture, but will gradually decrease the percentage of population dependent on agriculture for their livelihood. This will result in an increase in productivity and a rise in real income levels. Secondly, industrialization is not merely a process of technological improvement, but is a sociological process of far-reaching consequences. The experience of the West shows that industrialization was invariably followed by urbanization and modernization, which brought about a substantial fall in mortality rates and, after a time lag, in fertility rates as well, thereby creating a new demographic equilibrium.

In view of these considerations it has been maintained that rapid industrialization brings about a rise in the real income of the masses which results, sooner or later, in a lowering of fertility. Thus it is asserted that the surest and the best remedy for the problem of overpopulation in underdeveloped countries is rapid industrialization, rather than population control which is impracticable.

This type of reasoning assumes that rapid industrialization is possible without population control. This assumption can be challenged. Let us see how.

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20. Census of India, op. cit., Vol. III, Part I. Report on Madhya Pradesh, p. 61.

21. Ibid., Vol. I, Part I-A, pp. 209-210.

In a country like India, there are numerous obstacles to rapid industrialization, like lack of raw materials, power supply, financial capital, technical skill, equipment and administrative efficiency, foreign exchange resources, and so on, but the most formidable obstacle is the lack of adequate capital.

Modern large-scale industrialization is essentially a process of capitalization. In a country like India, where the per capita income is low and dependency is high, most of the income is spent on consumption, very little is saved, and still less is invested. A high rate of population growth makes the situation worse. The problem is how to increase productivity and real income at a rate faster than that of population increase. Now, if the population factor is to be left untouched (i.e., if the rate of population growth is not to be slowed down), a much larger amount of capital investment must be made than if the population factor were tackled simultaneously. The questions that arise are: (1) how large need the investments be, and (2) whether the savings are commensurate with this rate of investment.

Alfred Sauvy distinguishes between "demographic" and "economic" investments. Demographic investments are those which are necessary to keep pace with population growth. Economic investments are those which exceed the rate of demographic investment and thereby help in raising the level of living.[22] There cannot be economic development without economic investments.

In a country with a high rate of population growth and a low per capita income and consequently a low rate of savings, the demographic investments eat up all the savings, and there is little economic investment for improving the level of living. According to Singer's[23] calculations, the rate of savings in the underdeveloped countries must be roughly thrice the prevailing rate before an increase in per capita income is possible. If such a rate is not attainable, the population must remain stationary, or in the alternative, the capital-output ratio must be brought down.

In the First Five Year Plan of India, projections of increase in national income were based on a constant rate of population growth, viz., 1.25 percent per annum.[24] The Second Five Year Plan, however, revised these calculations and allowed for an increase in the rate of population growth as follows:[25]

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22. Alfred Sauvy, Théorie Générale de la Population, Vol. I, 1952, pp. 288-289.

23. H. W. Singer, "The Mechanics of Economic Development", The Indian Economic Review, August 1952, pp. 15-17. In Singer's model, for a 2% increase in the annual per capita income, the rate of net savings must be 16.25% in a country where the rate of population growth is 1.25% per year, and the capital income ratio is 5:1. If, however, the rate of savings is only 6%, the population must be kept stationary or in the alternative the capital income ratio must be brought down to less than 2:1 for the stipulated rate of increase in the per capita national income. If none of these things can be done, the economy will remain stationary.

24. First Five Year Plan, New Delhi, 1952, p. 20.

25. Second Five Year Plan, op. cit., p. 8.

1951-60	12.5%[26]
1961-70	13.3%
1971-80	14.0%

The First Five Year Plan referred to "the vicious circle of low output, low savings and low investment" and asserted that "the rate of savings as a proportion of total national income will have to go up from 5 percent in the base year 1950-51 and 6.75 percent in 1955-56 to about 11 percent by 1960-61, and 20 percent by 1967-68...On these assumptions the per capita incomes can be doubled by about 1977."[27]

The average rate of investment over the First Five Year Plan period was 6 percent of national income, which, the Second Five Year Plan says, "cannot be regarded as impressive."[28]

According to the Planning Commission's estimates,[29] investments in future plans will be as follows:

First Plan (1951-56)	7.3%	of national income at the end of the plan period
Second Plan (1956-61)	10.7%	"
Third Plan (1961-66)	13.7%	"
Fourth Plan (1966-71)	16.0%	"
Fifth Plan (1971-76)	17.0%	"

In these calculations, much depends on the assumptions regarding the capital-output ratio. In the First Five Year Plan, the capital-output ratio was taken at 3:1, with a time lag of two years between the increase in investment and the increase in output. The actual incremental capital-output ratio worked out at 1.88:1. This low figure was due partly to good monsoons and the great increase in agricultural output and also because of the considerable expansion in industrial output through the utilization of unutilized capacity. The incremental capital-output ratios for the Second, Third, Fourth, and Fifth Five Year Plans are assumed to be 2.30, 2.62, 3.36, and 3.70, respectively.[30]

Colin Clark's[31] calculations assumed a capital-output ratio of 4:1. In recent articles, however, he admits that "...it does seem that we can now safely

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26. The Foodgrains Enquiry Committee appointed recently by the Government of India points out that "we may have to allow for a population increase at the rate of 2.0 percent per annum during the period of the Second Plan." Government of India, Report of the Foodgrains Enquiry Committee, New Delhi, 1957, p. 57.

27. First Five Year Plan, op. cit., pp. 16, 21.

28. Second Five Year Plan, op. cit., p. 3.

29. Ibid., p. 11.

30. Ibid., p. 11.

31. Colin Clark, op. cit., p. 18.

conclude that the marginal capital co-efficient to which Indian planners should work can safely be estimated at any rate well below the figure of 4 prevailing in 19th century Britain. To put the figure at 2 is probably too low, but it may well be as low as 2.5."[32]

George Rosen of M.I.T., who studied the capital-output ratios in a few Indian industries concludes that the capital-output ratios in the cement and steel industries will be of the order of 3:1 for new and expanded plants, for such industries as heavy chemicals and heavy machinery building the capital-output ratios are probably at least of equal magnitude. "This would indicate that the investment requirements in the industrial sector will probably be greater than anticipated in the [Second] Plan."[33]

The emphasis on public health programs will have the effect of increasing the net survival rate (if the fertility rate remains the same) and thereby stepping up the rate of population growth, while the emphasis on heavy industries will tend to increase the capital-output ratio. It is doubtful, therefore, if a program of rapid industrialization can be sustained long enough in the absence of population control.

As the First Five Year Plan puts it, "the higher rate of increase of population, the larger is likely to be the effort needed to raise per capita living standards."[34] And the Second Five Year Plan maintains that "The logic of facts is unmistakable and there is no doubt that under the conditions prevailing in countries like India, a high rate of population growth is bound to affect adversely the rate of economic advance and the living standards per capita. Given the overall shortage of land and of capital equipment relatively to population as in India the conclusion is inescapable that an effective curb on population growth is an important condition for rapid improvement in incomes and in levels of living."[35]

Let us now consider the proposition referred to earlier that industrialization and the consequent urbanization and modernization will bring about a new demographic equilibrium. The view is often put forward that we can assume the rate of population growth as constant and formulate our plans for economic development as best as we can. We expect a rise in the level of living, however gradual, and as a result a gradual decline in fertility. This sounds like a very reasonable proposition, but the flaw is that the very argument put forward by those who hold this view can be set to counteract it. For industrialization results in a fall in mortality, and only after a time-lag of 50 to 100 years a fall in fertility. In the interval, the population grows at an increasing rate. This has been, in general, the experience of the West. So the rate of population growth cannot be assumed to be a constant factor. As a U.N. study points out, "...it is not valid to take the rate of population growth in underdeveloped countries as independently given, and to calculate the rate of industrialization that is necessary to yield a per capita increase in industrial production on the basis

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32. Colin Clark, India's Capital Requirements, Eastern Economist Pamphlet, New Delhi, 1956, p. 15.

33. George Rosen, "Industry in the Plan", The Economic Weekly, June 23, 1956.

34. First Five Year Plan, op. cit., p. 18.

35. Second Five Year Plan, op. cit., p. 7.

of the present rate of population growth of these countries. Indeed, industrialization, insofar as it brings economic and cultural gains that make possible a lasting reduction of death rates, is likely to raise the rate of population growth in the long run, and thus to increase still further the scale of industrial expansion necessary for economic progress. The argument for rapid industrialization is completed with the hypothesis that should the development of manufactures and other economic advances proceed rapidly enough, and be accompanied by social changes, there would be a reduction of fertility and slower population growth in the underdeveloped countries, such as occurred previously in countries now highly industrialized. However, it is not certain that the effect of industrialization on fertility will be the same in various countries of Asia, Africa, and Latin America as it seems to have been in Europe and Northern America."[36]

The Demographic Cycle

The various stages of demographic evolution can be linked up to form a pattern which may be called a demographic or population cycle. Many demographers have studied this cycle. Blacker,[37] for example, gives the following five phases of the demographic cycle: (1) the high stationary phase marked by high fertility and mortality rates (40 to 50 per thousand); (2) the early expanding phase marked by high fertility and high but declining mortality; (3) the late expanding phase of declining fertility but with mortality declining more rapidly; (4) the low stationary phase of low fertility balanced by equally low mortality; and (5) the declining phase of low mortality, lower fertility, and an excess of deaths over births.

Spengler[38] points out that on the basis of recent experience two of the five categories of Blacker can be eliminated. In almost every country, mortality is being controlled, and the countries belonging to the high stationary group are now in the early expanding group. Further, after 1940 the fertility in several countries of the West has risen (though mortality continues to decline), and there has been a slow growth of population in countries formerly classed under low stationary and declining.

A U.N. study[39] lists the following five types of population growth in the world: (1) high birth rates and high death rates, (2) high birth rates and declining (though still rather high) death rates, (3) high birth rates and already fairly low death rates, (4) declining birth rates and fairly low death rates, and (5) low or fluctuating birth rates and low death rates.

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36. United Nations, The Determinants and Consequences of Population Trends, New York, 1953, p. 276.

37. C. P. Blacker, "Stages in Population Growth", Eugenics Review, 1948, pp. 88-102; also Galton and After, London, 1952, pp. 151-185.

38. J. J. Spengler, "Demographic Patterns", in Harold Williamson and John Buttrick, eds., Economic Development: Principles and Patterns, New York, 1954, p. 86.

39. United Nations, Framework for Future Population Estimates, 1950-1980, by World Regions, Proceedings of the World Population Conference, Rome 1954, Vol. III, p. 288.

India today is in the second phase of the demographic cycle. As our vital statistics are far from accurate, it is not possible to make a proper study of birth and death rates. However, the 1951 census actuary has calculated that during the decade 1941-50 India's birth rate was 39.9 per thousand and the death rate 27.4 per thousand, thus yielding a net survival rate of 12.5 per thousand.[40] According to Coale and Hoover, however, the census actuary's estimates of the birth rate is "slightly too low for the decade 1941-1951". They maintain that "the fact that the Indian birth rate may be no higher than in the low 40's is indeed more puzzling and more in need of explanation than the fact that it appears to be above 40."[41]

Will India undergo the traditional demographic cycle and attain demographic equilibrium? S. Chandrasekhar thinks she will. He says, "...industrialization will encourage the development of new urban patterns of living which lead to the control of the high birth rate. The 'why' of this process need not be discussed here but this has been the experience in the United Kingdom, the United States, and the West generally, and in Japan. There is no reason why India should not conform to this experience of other countries, where industrialization has been accompanied by declining fertility."[42]

On the other hand, Paul Vincent and Alva Myrdal maintain that it is "demographic fatalism" to believe in the inevitability of the occurrence of the traditional demographic cycle. They say, "If industrialization of Asiatic and other countries should develop on the same lines as in Great Britain and in some European countries then one might have another series of classical phenomena: first, backward rural areas incessantly throwing their overflow of population out into their industrial centres to swell the numbers of a miserable urban proletariat, and then a struggle for survival in which the families learnt to avoid the prolific numbers, in order to keep up or raise their standards in a competitive society. If Asia should repeat the same process, we might rightly conclude that nothing is learned from history. If, on the other hand, the peoples of Asia succeed in rapidly instructing the great masses of rural population, then these people might provide an instance of agricultural progress coming before industrialization and of technical and economic modernization taking place at the same time as sufficient advances in hygiene and education harmonize adjustment of both mortality and fertility. This would make it possible to skip that intermediate stage most feared by the pessimists of reduced mortality with continued high fertility, which results in unprecedented population growth."[43]

S. Chandrasekhar's weak point lies in the fact that he does not go into the 'why' of the process of industrialization. C. Chandrasekaran, on the other hand,

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40. Census of India, Paper No. 6, New Delhi, 1954, Estimates of Birth and Death Rates in India during 1941-50, p. 18.

41. A. J. Coale and E. M. Hoover, Population Growth and Economic Development in India, 1956-1986, mimeographed, July 1956, p. V-7.

42. S. Chandrasekhar, India's Population: Fact and Policy, 1950, p. 147.

43. Alva Myrdal and Paul Vincent, Are We Too Many?, UNESCO, 1950, pp. 38, 40-41.

maintains on the basis of the United Nations-Government of India Population Survey in Mysore that "the overall fertility of the country is likely to increase as a result of economic and social development."[44] There are weighty reasons why the experience of Europe of the nineteenth century cannot and should not be repeated in the underdeveloped countries of the twentieth century. Kuznets[45] has made an excellent study in comparison of the underdeveloped countries of today and the developed countries in their pre-industrial phases. His thesis may be briefly summarized here. (1) The developed countries in the pre-industrial phases represented small population groups (mostly less than 30 million). Several of the underdeveloped countries today have more than 50 million population. (2) The population of many underdeveloped countries has been growing in recent decades at much higher rates than the population of the developed countries in their pre-industrial phase. (3) One possible factor in the higher rate of growth is probably a higher crude birth rate. (4) Another factor is a lower death rate

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44. C. Chandrasekaran, India's Population Problem, mimeographed paper presented at the Inaugural Conference of the Demographic Teaching and Research Centre, Bombay, on November 5, 1957, p. 9. He points out that, "contrary to expectations, women in Bangalore city had given birth to more children during the course of their reproductive life when compared with women of the rural areas, the average number of children born being 5.3 for Bangalore city and 4.8 for the rural areas. The less incidence of widowhood and delayed widowhood in Bangalore city were probably responsible for its ever-married women having a higher fertility than those in rural areas. Largely because of such differences in the rate of widowhood, the survey also showed that the average number of children born to ever-married women aged 45 years and over actually increased with a rise in social status. In rural areas it was found that women living in huts had 4.4 live births, whereas those living in 'mudhouses with thatched roof' had 4.5 live births, and those living in still better houses had 5.0 live births. Similarly, women belonging to households of agricultural labourers had 4.0 live births, while those of households of cultivators of 'low' economic status had 4.7 live births, and those of households of cultivators of 'high' economic status 5.1 live births. With improvement in health conditions, women in the lower social and economic status categories will have a greater span of effective reproductive period, as fewer of them will become widows at an early age. As a consequence, the differentials in fertility which now exist are likely to disappear, and the overall fertility of the country is likely to increase. Apart from such indirect effects on fertility, improvement in medical and public health services can also be expected to have a direct effect by increasing the chances of conception. In this connection, it may be stated that fertility appears to have increased in areas which have been subject to large scale anti-malarial measures. It is also possible that the provision of good maternity programmes especially in the rural areas would lower the dangers of sterility which may be produced by poor obstetrical services and thus tend to increase fertility."

45. Simon Kuznets, "Underdeveloped Countries and the Pre-industrial Phase in the Advanced Countries", in United Nations, Proceedings of the World Population Conference, New York, 1954, Vol. V, pp. 961-966.

than that prevailing in the last century. (5) No large-scale international migration opportunities comparable to those of the nineteenth century are available for the underdeveloped countries of today. (6) The underdeveloped countries today have a lower income level than that prevailing in the developed countries in their pre-industrial phase. To this list, one more factor may be added: the underdeveloped countries today have no colonies to exploit, as most developed countries had in their early stages of development.

But there is the other side of the picture, too. The underdeveloped countries today have obvious advantages not enjoyed by the developed countries in their pre-industrial phase. Underdeveloped countries today do not need to invent but only to borrow techniques, perfected through decades of trial and error, from the developed countries. Industrialization in the atomic age is not only easier but much faster than ever before possible. And if the days of colonial exploitation are gone or are fast disappearing, there is nothing to lament over. The era of international cooperation is already in sight. Likewise, the spectacular advance in medical science has made possible a rapid and substantial reduction in mortality rates even in poor countries. Why need we wait for a time lag of 50 to 100 years for a fall in fertility rates? Can we not reduce fertility during the process of industrialization and as fast as mortality goes down? This brings us to the question of population control.

Family Planning

This again is a controversial subject. The 1951 Census Commissioner of Mysore vehemently opposes all measures for population control and says in his report, "This belief in the efficacy of birth control propaganda in checking population growth is essentially doctrinaire...actually there can be only two possible remedies, namely, exercise of self control and secondly, application of scientific methods of birth control. The first is impracticable and the second is impossible." He goes on to say, "The family's problem then is not one of reducing its members but that of increasing its income, and what is true of the family is true of the State also. Its problem is not one of limiting the numbers but that of raising the purchasing power of the people. Essentially, therefore, it is an economic problem and the solution of the problem lies not in family limitation but in economic development. You cannot expect biological remedies to cure economic ills."[46]

On the other hand, the 1951 Census Commissioner of Madras writes in his report, "All these circumstances point to the need for family planning, and to the Government's doing all that they can to assist parents to plan their families on healthy lines. Such planning is desirable, not only in the national interest, but also from the point of view of the individual families, and the health of the mothers and that of their children. Family planning is called for, not only for restricting the number of children but also for spacing their births suitably."[47]

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46. Census of India, op. cit., Vol. XIV, Part I, Report on Mysore, pp. 50, 53.

47. Ibid., Vol. III, Part I, Report on Madras and Coorg, p. 226.

The 1951 Census Commissioner of Travancore-Cochin says in his report, "...very early steps have to be taken to check the growth of population in the State", but he feels that "contraception or abstinence may not be practical solutions to the problem of overpopulation." After analyzing the census data of his State, he says, "Thus the high percentage of first maternities before the mother is 25 years old is one of the chief factors in the high rate of population growth. It is therefore suggested that the postponement of marriage of women to their 20th year, thereby putting off the first maternity to at least that age, will prove efficient in retarding population growth."[48]

But the Census of Commissioner of India has not much faith in postponement of marriage. He recommends a drastic reduction in fertility through all possible means. He says, "We must count it a fortunate circumstance that the religious faith of most of our people is not bound up with this taboo." He suggests the creation of a Central Research and Information Unit "to recommend a few acceptable, efficient, harmless, and economic methods which are suitable for being sponsored by Government."[49]

The extent to which reduction in fertility is possible depends on two factors: (a) availability and knowledge of effective means of birth control, and (b) the willingness to limit fertility.

In India, the first factor is more important than the second, for there is no strong, organized, and widespread opposition to birth control on religious, moral, or other grounds. Perhaps the most important argument against birth control put forward by the average Indian is that it is against the will of God because children are given by God, and limiting births will be going against God. It will not be very difficult to explain to such people that choice can play a role as important as chance. Of late, there have been a few surveys for determining the attitude of the people towards family planning, and the general finding seems to reflect an attitude favorable to family limitation. Reference may be made to the Survey of Fertility and Mortality in Poona District, conducted by the Gokhale Institute of Politics and Economics. In the city sample, out of 850 men questioned, only 9 thought that contraception was immoral, and 59 thought it was against the will of God, while in the non-city sample, out of 855 men questioned, only 8 thought contraception was immoral and 85 thought it was against the will of God. Among the 511 females in the city sample, 9 thought that contraception was against religion, and 55 thought it was against the will of God, while in the non-city sample, out of 240 women, 11 thought contraception was against religion, and 29 thought it was against the will of God. Commenting on the attitude towards family planning, the authors of the report point out that "The most significant fact about the situation, therefore, is the large number of persons, both males and females, in the city as well as the non-city area, who said they would welcome information on the subject of family limitation and the substantial number among them who voluntarily said that they would immediately adopt the method in practice."[50] And Professor Gadgil says in his Foreword, "While on the

48. Census of India, op. cit., Vol. XIII, Part I-A, Report on Travancore-Cochin, p. 27.

49. Ibid., Vol. I, Part I-A, India, pp. 211, 221.

50. V. M. Dandekar and Kumudini Dandekar, Survey of Fertility and Mortality in the Poona District, Poona, 1953, pp. 144, 172, 173.

one hand, it shows that the actual practice of family planning, even in a city like Poona, is yet extremely limited in scope, it also reveals a generally receptive attitude, extensive readiness to obtain useful and effective information, and considerable preparedness to adopt family planning in case the means are suitable and appropriate... It yet appears clear that there exists no important element in the socio-economic framework or in the ideological make-up of the people which would make progress impossible if a movement towards family planning is launched appropriately."[51]

This conclusion is generally true, but there is an economic aspect of family limitation which is very often forgotten. India is a predominantly agricultural country. A cultivator needs plenty of labor, particularly during harvest time, and unpaid family labor makes a big family an asset. Why should a cultivator have a small family unless he is sure that his savings as a result of restriction of numbers will more than compensate his increased expenditure on account of hired labor? To solve this problem, Paul Vincent[52] suggests compulsory education in rural areas and a gradual extension of the period of schooling so that children can not be employed on the farm and, as a result, a farmer should not want a big family. His scheme of family planning would give the first place to a nationwide program of building schools in rural areas.

Of course, one might say that mechanization of agriculture will greatly reduce the demand for labor, and the cultivators may not have to employ much hired labor. On the same reasoning, one might ask why there should be family limitation in the absence of mechanization of agriculture? All this shows how the enforcement of family limitation on a wide scale is directly linked up with agricultural progress. We cannot consider the problems in isolation.

Or take the case of our urban population, which is generally landless. What security has it in sickness, disability, unemployment, and old age? A man having a fair number of children (especially sons) has a better security than one having very few or no children. Why should he have recourse to family limitation in order to build up a bank account which may give him some security? Is not investment in human beings the best investment? A nationwide program of family limitation, if it is to be successful, must be linked up with at least a minimum program of social security.

Another point to be noted in this connection is that in India there is no marked difference between the urban and the rural birth rates. The same is true of attitudes towards family planning in urban and rural areas. The Ministry of Health of the Government of India, in collaboration with the World Health Organization, initiated two pilot studies in family planning in 1952, one among educated lower income civil servants in New Delhi, and the other among the illiterate residents of 14 villages of Mysore state. The final report of these pilot studies says, "An attitude survey among 1,088 couples in 14 villages near Ramanagaram and 1,274 women in Lodi Coloni, New Delhi, revealed the high degree of existing for family planning in two extremely different parts of the country and among

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51. Dandekar and Dandekar, op. cit., Foreword, by D. R. Gadgil, p. iv.

52. Talk given by Paul Vincent in the Delhi School of Economics, Delhi, in 1951.

radically different groups of population. Approximately 75% of each population expressed a desire to learn a family planning method."[53]

In India, we need not wait for the lengthy and costly process of industrialization-urbanization-modernization to effect a lowering of fertility. We can start at once with modernization--modernization of villages in the shape of proper medical facilities (including facilities for family limitation), hospitals, schools, and so on, and not the so-called modernization of cities in the shape of bars, billiard salons, and night clubs.

Today it is a platitude to say that India lives in her villages. But the most important conclusion that emerges from a study of the demographic and economic data collected in the Census of 1951 is that India lives in her villages. Seventy percent of the people of India depend on agriculture for their livelihood, 83 percent of the people live in rural areas, half of the non-agricultural population is rural. For every city in India, there are 7,645 villages. Early marriage is the general practice, and notwithstanding the Child Marriage Restraint Act, 15 percent of the females in the age-group 5-14 are married.

In India, thinking in terms of an urban way of life and an urban birth rate will not carry us far. We have to deal with a peasant economy and rural masses.

It is encouraging to note that the Planning Commission of India has paid attention to population problems from the very beginning. The Government of India also did not hesitate to adopt population control as State policy. The First Five Year Plan emphasized the need for population control and allocated Rs. 6.5 million for family planning.

The family planning program envisaged in the First Five Year Plan, however, was more academic than practical, and not much was done in spreading family planning during the plan period. The Government of India consulted a few family planning experts, some field investigations were carried on in Delhi and Mysore, a Family Planning Research and Programmes Committee was set up, and one state government inserted advertisements in newspapers pointing out the benefits of family planning.

The Second Five Year Plan also reiterated the need for "a large and active programme aimed at restraining population growth" and made a provision of Rs. 50 million for the family planning program, which aims at setting up about 300 urban and 2,000 rural clinics.

Reference may be made here to an interesting debate that took place in the Indian Parliament in 1954. A Praja-Socialist-Party member moved the following resolution on family planning:

> This House is of opinion that with a view to control the rapid increase in population as revealed in the Census Report, 1951, Government should

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53. World Health Organization, Final Report on Pilot Studies in Family Planning, New Delhi, 1954, Vol. I, p. 79.

adopt all effective measures to encourage family planning in accordance with the recommendations of the Planning Commission. [54]

In reply to this, a Communist member moved the following resolution:

This House is of opinion that the idea of family planning as State policy is based upon a theory which has no scientific validity and which is utilised by reactionaries all over the world to lay upon the people the responsibility for their failure to improve the standard of living of the people. This House, therefore, urges upon the Government the abandonment of family planning as a national policy. [55]

Mrs. A. Kale (Congress) said, in the course of the debate, "I, myself, along with other women in the Women's conferences have been working in this direction [family planning] for the last 23 years. Let me tell you that all these years I have not met a single women so far who is against family planning..."

Rajkumari Amrit Kaur, the Health Minister, said in her reply, "...perhaps the Government of India is the only government in the world that is even attempting to tackle it from a governmental level...there is no need for a resolution like this, because as I have said, Government have taken up the question in right earnest and are doing more than what the Hon. Mover has said." She pointed out that "there is no ban on anybody buying contraceptives." She, however, was for the rhythm method of family planning, and also for raising the age of marriage of girls.

In view of the assurances given by the Health Minister, the mover of the resolution withdrew the resolution.

In the Ministry of Health, a high-powered Family Planning Board has been formed, with the Union Minister of Health as Chairman, to consider the policy and programs of family planning. There is a Standing Committee with the Secretary, Union Ministry of Health, as Chairman, to implement the policy formulated by the Board and to scrutinize the various proposals relating to family planning.

Central assistance is given to the State governments as well as to various private organizations for encouraging and spreading family planning. Medical research on family planning techniques, field surveys, and demographic research are being encouraged through generous grants from the Central Government.

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54. This and the subsequent extracts are taken from India, House of the People, Parliamentary Debates, New Delhi, Vol. II, No. 26, March 1954, pp. 2589, 2597, 2625, 2628-2636.

55. This makes interesting reading in the light of the recent shift in the population policy in Communist China. In June 1956, the Minister of Health reported to the National People's Congress in China: "We have failed to popularise birth control which may be beneficial to the health of mothers and children, to the education programme for children, and to the prosperity of our own nation. From now on, we must develop our work concerning publicity and education and strengthen our work of providing technical leaders." Quoted by Irene B. Taeuber in "Population Policies in Communist China", Population Index, October 1956, p. 270.

The ultimate success of family planning, however, will depend on the extent to which our rural masses accept and practice family planning. It has been found that a health center or a welfare center in rural areas is far more successful in popularizing family planning than a family planning clinic started exclusively for the purpose of spreading family planning. Sex is a taboo for the rural millions and the success of family planning will depend on how best we may approach the rural population, rather than how much money we spend in villages.

Conclusion

The paper may be summed up by drawing a few conclusions:

1. Though rapid industrialization is essential for the economic progress of India, it cannot be a demographic solution of the population problem in the sense that it can obviate the need for a deliberate and organized attempt to slow down the rate of growth of population. The argument that an increase in the level of living of the people will bring about a fall in birth rates does not carry much weight, as the present demographic situation in India does not indicate that a substantial rise in the level of living of the people is possible without the aid of population control.

2. With regard to the occurrence of the demographic cycle in India, we cannot say with certainty that the history of Europe will repeat itself in India, and even if we have a demographic cycle similar to that undergone by the countries of Europe we cannot expect the same results to follow. If industrialization results in an increasing rate of population growth, and if the fall in fertility follows the fall in mortality only after a considerable time lag, there is the danger that instead of reaching the third (late expanding) phase of the demographic cycle, we may revert to the first (high stationary) phase of the cycle. Even if this does not happen, there would be every possibility that the present linear trend of increase in population might give place to the cyclical trend of population increase which was prevalent until 1921.

3. The remedy seems to be in a new type of demographic cycle which will effect the transition from the second to the third phase of the demographic cycle in as short a time as possible. That is to say, the fall in fertility should take place during industrialization and not after it, so that there will be a simultaneous fall in mortality and fertility.

4. In view of the favorable attitude, in general, towards family planning in India, the problem of finding effective means of population control is perhaps more important than that of creating an atmosphere favorable for family limitations.

5. Rather than seek a solution of the population problem through urbanization, we should look into the urgent problem of modernization of India's villages, as the village contains the key to Indian economy.

6. Neither a superstitious faith in industrialization nor a fanatical advocacy of birth control will carry us far. The social, economic, and demographic factors are interrelated, and the correct solution of the population problem can be found only in a pattern of development which takes due note of these interrelationships and aims at achieving demographic stability, economic development, and social progress.

THE PUBLIC AND PRIVATE SECTORS

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The issue of the appropriate size and roles of the public and private sectors is in a sense common to all mixed economies but is naturally of greater consequence to underdeveloped countries striving to attain a rate of economic development higher than what is possible under conditions of laissez faire. Historically, most countries have had at one time or the other to face this problem of the respective role of public and private enterprise. The classical economists dealt, although inferentially, with the great debate on the "agenda" and "non-agenda" of the state,[1] and a good part of modern welfare economics is taken up with the economic theory of the state.

The controversy of state and private enterprise, though it has naturally assumed greater importance in contemporary India in the context of planning, in a sense harks back to the Victorian age, when "the civil servants in India were anxious that the new enterprises like the railways and irrigation works should be state-owned with revenues accruing to the Government. In this they followed Continental rather than English or American precedent. But the upshot was a chronic difficulty in attracting finance to India; the City was averse to advances where the threat of nationalisation was present... The London end of Indian Government, holding City views, was at war with the Indian end."[2]

It is of course only too easy to exaggerate the importance of this controversy. As Professor Lewis says, "sensible people do not get involved in arguments whether economic progress is due to government activity or to individual initiative; they know that it is due to both, and they concern themselves only with asking what is the proper contribution of each."[3] Since the subject has political overtones, it is vitally important to separate the economic reasoning from the political and social value judgments. In fact, the present article attempts to show that, though considerations of social policy have no doubt been one of the factors in the growth of the public sector in India, the expansion of the public sector can be interpreted and justified largely on grounds of economic logic. It would, of course, be tedious to detail the entire network of relations between the public and private sectors in India. A simple and more convenient approach to this question is through an analysis of the role of the public sector in India in recent years in the light of official policy and its economic rationale.

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1. Following Jeremy Bentham's terminology. Cf. Lionel Robbins, The Theory of Economic Policy in English Classical Political Economy, London, 1952, p. 39.

2. S. G. Checkland, "The Mind of the City, 1870-1914", Oxford Economic Papers, Vol. 9, No. 3 (October 1957), p. 269.

3. W. A. Lewis, The Theory of Economic Growth, London, 1955, p. 376.

I

It may be useful at the outset to get an idea of the size and importance of the public sector in the Indian economy with reference to the share of government in the generation of the net national domestic product and in national expenditure, for which data are available from 1948-49 onwards.

Table I. Components of National Income: India, 1949-56
(in Rs. abja at current prices)

	1949	1950	1951	1952	1953	1954	1955	1956
Government share in generation of net domestic product								
1. Net output of government								
a. enterprises	2.4	2.7	2.9		3.1	3.2	3.6	4.1
b. administration	4.0	4.1	4.3		4.6	4.9	5.2	5.7
2. Net output of private sector	80.3	83.5	88.3		98.3	96.7	87.3	90.1
3. Net domestic product	86.7	90.3	95.5		98.3	104.8	96.1	99.9
Government share in national expenditure								
4. Government current expenditure on commodities and services (administration)	6.4	5.4	5.6		6.0	6.4	6.7	7.2
5. Government administrative capital expenditure	1.0	1.2	1.0		1.2	1.3	1.6	2.1
6. Government enterprises capital expenditure	1.1	1.5	1.7		1.8	2.1	2.7	3.5
7. Net national expenditure at market price	90.6	94.6	100.3		103.4	110.4	102.3	106.7

Abja = Rs. 100 crores.

Source: Final Report of the National Income Committee, February 1954, Ministry of Finance, Government of India; Estimates of National Income, 1948-49 to 1956-57, Central Statistical Organisation, Government of India.

The relative importance of the government sector can be gauged even better with reference to the percentage distribution of the above magnitudes and the extent of government draft on private income. (See Table II.)

Thus, judged by the share of government in national output (around 9 percent) and national expenditure (around 12 percent), the size of the public sector should be regarded as being among the lowest in the world. International comparisons in this regard are subject to numerous conceptual and statistical

Table II. Percentage Share of Government in Domestic Product and Expenditure and Government Draft on Private Income

	1949	1950	1951	1952	1953	1954	1955	1956
1. Net output of government sector (enterprises and administration)	7.4	7.5	7.5		7.8	7.7	9.2	9.8
2. Net output of private sector	92.6	92.5	92.5		92.2	92.3	90.8	90.2
3. Government share net national expenditure at market price	9.4	8.6	8.3		8.7	8.9	10.7	12.0
4. Government draft on private income	7.9	8.1	8.0		8.1	7.7	9.0	9.5

Source: Estimates of National Income, op. cit.

Table III. General Government Consumption Expenditure as Percentage of Expenditure on Gross National Product in the U. K. and the U.S.A. (at current market prices)

	1950	1951	1952	1953	1954	1955
United Kingdom (million £)						
1. Expenditure on gross national products	13,222	14,597	15,796	15,866	17,964	19,058
2. General government consumption expenditure	2,102	2,518	3,012	3,211	3,211	3,267
3. As percentage of (1)	15.9	17.9	19.1	18.8	17.9	17.1
United States (million $)						
1. Expenditure on gross national product	286,549	330,601	348,185	365,326	362,738	392,815
2. General government consumption expenditure[1,2]	35,163	55,956	70,309	74,350	68,285	68,391
3. As percentage of (1)	12.3	16.9	20.2	20.4	18.8	17.4

1. Increase in stocks of federal government enterprises and the stockpiling of strategic and critical materials are excluded in "Increase in stocks"; increase in stocks of other government agencies are included in "General government consumption expenditure.
2. Government expenditure on equipment is excluded in "General government consumption expenditure"; government expenditure on non-defense construction is included in "Gross fixed capital formation".

Source: U. N. Statistics of National Income and Expenditure, Serial H, No. 10, paragraphs 255, 264.

limitations, but even so it may be of interest to indicate the broad orders of magnitude in some advanced economies, which should enable us to judge the relations between the public sector and the private sector in India in the proper perspective (see Table III).

According to another estimate for the United Kingdom for the year 1954, "the proportion of the Gross National Product arising as production in the public sector was just under 10 percent for public administration, defence, public health, and education services, to which about another 10 percent may be added for public corporations (nationalised industries)."[4]

The foregoing figures point to the fact that the size of the public sector in India is by no means large, considering that the range of activities which the government can usefully undertake is "even wider in the less developed than in the more developed economies."[5] Besides, the public sector in India is largely confined to a small part of the organized sector of secondary and tertiary industries. The private sector in India embraces the large part of organized and unorganized industry, as well as agriculture and trade.

II

The emphasis on official policy has been on the complementarity of the public and private sectors. According to the Second Plan document, "the public sector has to grow--and rapidly--and the private sector has to conform to the requirements of the Plan. There has necessarily to be a great deal of dovetailing between the two sectors, and it is recognised that the private sector has to be given the opportunity and facilities to function effectively within the field allotted to it." The Second Plan, no doubt, aims at reduction of inequalities of wealth and incomes and to promote thereby a more even distribution of economic power, but it also aims at rapid industrialization, with the accent on the development of basic industries, expansion of employment opportunities, and an increase of the order of 25 percent in national income.

This combination of objectives is vital to a correct appreciation of the role of the public sector in India, which is conceived more as an instrument of economic initiative and growth intended to accelerate the progress of the economy to the "take-off point", rather than as a doctrinaire instrument of distributive and social justice. This is evidenced among other things by the fact that the development of the public sector has been largely through the creation of new units, rather than by the nationalization of existing ones. Of course, in underdeveloped economies, because of the shortage of existing capital assets, the growth of the public sector has to be inevitably through the setting up of new enterprises. But even so, it is noteworthy that in India, though the private sector in industry and finance is much bigger than in other underdeveloped economies, the expansion of the public sector has largely not relied on nationalization, except partially in the field of banking and insurance.

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4. R. L. Marris, "A Note on Measuring the Share of the Public Sector", Review of Economic Studies, Vol. XXII, No. 59, p. 219.

5. W. A. Lewis, op. cit., p. 382.

The first major pronouncement on industrial policy of the Government of India after independence as contained in the Industrial Policy Resolution of April 1948, classified industries into four broad categories. The first of these, consisting of the manufacture of arms and ammunition, production and control of atomic energy, and railway transport, were to be the exclusive monopoly of the state. This was a natural continuation of the pre-independence arrangements, when manufacture of arms and ammunition was the exclusive prerogative of the government; the ownership of railways had already passed into government hands after the repatriation of India's sterling debt in wartime, which redeemed the sterling capital invested in railways. Atomic energy, which all over the world is an exclusive prerogative of government, was, of course, a natural choice for this category. In the second category were placed industries such as coal, iron and steel, aircraft manufacture, shipbuilding, mineral oils, etc. The state would be exclusively responsible for the establishments of new undertakings, except where in the national interest the state finds it necessary to secure the cooperation of private enterprise, which would be left free to develop the existing units for a period of ten years. An assurance of fair and equitable compensation in the event of the state acquiring any of these undertakings was also given. The third category, comprising certain basic capital and consumer goods such as heavy machinery, chemicals, fertilizers, movers, industrial alcohol, cement, sugar, paper, textiles, minerals, defense industries, air and sea transport, etc., was to be subject to government control and regulation, while the last category was left to private enterprise, individual as well as cooperative, with provision for progressive participation by the state in certain fields, such as mass production of fertilizers and manufacture of essential drugs.

In view of the several important changes and developments in the country, subsequent to this resolution, such as the promulgation of the Constitution, the acceptance by Parliament in December 1954 of the socialist pattern of society as the objective of social and economic policy, and the experience of the First Five Year Plan, a fresh statement of industrial policy was made by the Government of India through its Industrial Policy Resolution of 20th April 1956, on the eve of the Second Five Year Plan.

This resolution, broadly, states that all industries of basic and strategic importance, public utilities, and those essential industries which require investment on a scale which in present circumstances only the state could provide, have to be in the public sector. The Government of India have, in consultation with the Planning Commission, classified industries into three categories, giving the state a different part to play in each. The first category (Schedule A) consists of industries whose future development will be the exclusive responsibility of the state, such as defense equipment, atomic energy, iron and steel, heavy engineering, coal and lignite, air and rail transport, shipbuilding, etc. The second category consists of industries "which will be progressively State owned and in which the State will therefore generally take the initiative in establishing new industries but in which private enterprise will also be expected to supplement the effort of the State." These include all other minerals except minor minerals, aluminum and other non-ferrous metals not included in Schedule A, machine tools, ferro-alloys and tool steels, basic and intermediate products required by chemical industries, antibiotics and essential drugs, fertilizers, road and sea transport, etc. The third category consists of the remaining industries, whose future development will generally be left to the private sector.

The relative importance of the role of the public and private sectors as specified in the Industrial Policy Resolution has been well expressed by the Second Plan document. "The public sector has to expand rapidly. It has not only to initiate developments which the private sector is either unwilling or unable to undertake; it has to play the dominant role in shaping the entire pattern of investments in the economy, whether it makes the investments directly, or whether these are made by the private sector. The private sector has to play its part within the framework of the comprehensive plan accepted by the community. The use of modern technology requires large scale production and a unified control and allocation of resources in certain major lines of activity. These include exploitation of minerals and basic and capital goods industries which are major determinants of the rate of growth of the economy. The responsibility for new developments in these fields must be undertaken in the main by the State and the existing units have also to fall in line with the emerging pattern. Public ownership, partial or complete, and public control or participation in management are specially required in those fields in which technological considerations tend towards a concentration of economic power and of wealth. In several fields, private enterprise can, under present day conditions, make little headway without assistance and support from Government, and in these cases the public or semi-public character of the resources drawn upon has to be recognised. In the rest of the economy conditions have to be created in which there is full scope for private initiative and enterprise either on an individual or on a co-operative basis. In a growing economy which gets increasingly diversified there is scope for both the public and private sectors to expand simultaneously, but it is inevitable if development is to proceed at the pace envisaged and to contribute effectively to the attainment of the larger social ends in view that the public sector must grow not only absolutely but also relatively to the private sector."[6]

This explains why the ratio of public to private investment in the Second Plan is 61: 39, as against 50: 50 envisaged in the First Plan. Total investment in the economy during the First Plan period is roughly estimated to have been arou Rs. 3,100 crores, of which the private sector accounted for slightly over half. Th investment target for the Second Plan works out to Rs. 6,200 crores, of which Rs. 3,800 crores are accounted by the public sector.

III

The composition of the public sector in India at present is an apt exempli fication of the economic rationale of such a sector in an underdeveloped economy Thus it embraces the provision of social and economic overhead capital in the form of communications, power, irrigation, notably the multi-purpose projects. Another important segment consists of the basic capital goods, such as the steel projects, chemicals, etc., which involve lumpy investment with long periods of gestation, as also certain essential consumers goods, such as salt and antibiotic The case for a public sector in these lines would not, of course, be seriously controverted, though perhaps the need for a nationalized financial sector in commercial banking and life insurance may not be as self-evident.

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6. India, Planning Commission, Second Five Year Plan, New Delhi, 1956, pp. 22-23.

But the economic rationale of a public sector in the financial sphere in an underdeveloped economy can be argued out on the basis of its external economies, and its effectiveness as an instrument for mobilization of savings. It is somewhat surprising that the very considerable literature on welfare economics does not contain any systematic discussion of the case for a government sector in banking and insurance in terms of external economies.[7]

An efficient and widely ramified banking system is as necessary and vital a part of social overhead capital as, say, communications, power, and other public utilities. This is particularly relevant in an economy like India where there is a large non-monetized sector and where bank deposits account for only a third of the money supply. The external economies of commercial banking are substantial and constitute a strong case for the provision of banking services by the state at less than average cost or even below marginal cost, at least in selected sectors or regions of the economy. Of course, to a certain extent, private commercial banks do provide banking services at below cost through the maintenance of losing branches, which may be described as being mainly "deposit" centers, which are subsidized, as it were, by the profit-making branches ("advances" centers). But this is on a very limited scale and is not part of a conscious policy of provision of banking services in under-banked areas, which can only be undertaken by a state-owned commercial bank. It is in the light of the need for supplying the credit requirements of under-banked rural areas that one has to view the nationalization of the Imperial Bank of India. The recommendation of the Committee of Direction of the All-India Rural Credit Survey suggested, among other measures, the creation of "one strong, integrated, State-sponsored commercial banking institution with an effective machinery of branches spread over the whole country, which, by further expansion, can be put in a position to take over cash work from non-banking treasuries and sub-treasuries, provide vastly extended remittance facilities, for co-operative and other banks, thus stimulating the further establishment of such banks, and, generally in their loan operations, insofar as they have a bearing on rural credit, following a policy, which, while not deviating from the canons of sound business, will be in effective consonance with national policies as expressed through the Central Government and the Reserve Bank." It may also be added that the choice of the Imperial Bank of India as an appropriate institution for spreading banking facilities in the rural areas was governed by the fact that it was in effect a government-sponsored bank whose organization, functions, and privileges stood apart from other commercial banks. Thus the Imperial Bank of India functioned as the agent of the Reserve Bank where the latter had no offices. It would be evident that the nationalization of the Imperial Bank has been determined more by economic criteria and the historical antecedents of the bank than by any ideological considerations.

Consequent upon the recommendations of the Committee, the State Bank of India Act was passed by the Indian Parliament in May 1955, and on July 1, 1955, the State Bank of India came into existence as the successor of the Imperial Bank of India. Under its statute, the State Bank is to function as an autonomous

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7. Thus W. J. Baumol's Welfare Economics and the Theory of the State, Cambridge, Mass., 1952, which contains a systematic discussion of the "external economies" argument and the economic theory of the state, makes only a bare illustrative reference to the external economies of the monetary system in terms of Keynes' discussion of the effectiveness of the bank rate as a mode of control of member banks' borrowing from the central bank (J. M. Keynes, A Treatise on Money, London, 1930, Vol. II, pp. 244-250).

institution on business principles, subject to any directions that the central government may issue in regard to matters of policy involving public interest. Further, the Act requires the State Bank to open not less than 400 branches within a period of five years or such extended period as specified by the government in accordance with the program of expansion to be approved by the central government. It also constitutes, with a view to meeting losses that may be incurred by the bank having to open and operate unremunerative branches in the national interest, an "Integration and Development Fund", to which are to be credited the dividends payable to the Reserve Bank on its share holdings up to 55 percent of the total capital and other contributions as the Reserve Bank or the central government may make in future. It should be noted that even after the setting up of the State Bank, nearly two-thirds of commercial banking is still in the private sector.

The nationalization of life insurance business in 1956, which is now vested in the Life Insurance Corporation of India, should be viewed essentially as an instrument of mobilization of the community's savings. As the Finance Minister of the Government of India observed while explaining the background of nationalization of life insurance, "with a Second Plan in the offing involving an accelerated rate of investment and development, the widening and deepening of all possible channels of public savings has become more than necessary. Of this process, the nationalisation of insurance is a vital part."[8] The assumption of state ownership of control of life insurance has also been actuated by the need to safeguard the interests of policyholders which have in the past been jeopardized by the tendency to "utilise the funds to meet the capital requirements of enterprises in which the managements are interested."[9] The consideration that weighed in not bringing general insurance into the public sector was "the basic fact that general insurance is part and parcel of the private sector of trade and industry and functions on a year to year basis. Errors of omission and commission in the conduct of its business do not directly affect the individual citizen. Life insurance business, by contrast, directly concerns the individual citizen whose life savings so vitally needed for economic development may be affected by any acts of folly or misfeasance on the part of those in control or be retarded by the lack of imaginative policy."[10] The operation of the Life Insurance Corporation, which was set up on September 1, 1956, exemplifies many of the other benefits of nationalization, notably the lowering of premium rates, offer of new schemes to cater to needs of the industrial and rural working class, and extension of insurance to certain types of sub-standard risks who were previously ineligible.

There is, besides, a network of government sponsored institutions to extend financial and technical assistance to the private sector, such as the Industrial Finance Corporation of the Government of India, the different State Financial Corporations, the Industrial Credit and Investment Corporation, the National Industrial Development Corporation, the National Small Industries Corporation, the Indian Handicrafts Development Corporation, and the proposed Refinance Corporation. This is in addition to the direct loans and grants given to private industry

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8. Reserve Bank of India Bulletin, February 1956, p. 142.
9. Ibid., p. 144.
10. Ibid., p. 144.

by Central and State Governments. The Government of India has recently established the Export Risks Insurance Corporation to guarantee against certain types of export risks. The setting up of the State Trading Corporation has been largely prompted by the need to facilitate trading relations with collectivist economics as well as to foster new lines of exports. It aims at supplementing rather than supplanting private foreign trading.

It is also necessary to emphasize two other aspects of relations between the public and private sectors in India. The first concerns the issue of compensation for property assumed by the state. Though the Constitutional amendment of 1955 has removed questions of compensation from the jurisdiction of courts, it has not affected the accepted policy of giving fair and equitable compensation as has been amply borne out by the compensation given to the shareholders of the Imperial Bank of India and the life insurance companies. Secondly, the principle of non-discriminatory treatment as between public and private units in the same industry and as between foreign enterprise and domestic enterprise in the private sector is a vital element of public policy in India at present.

Thus, it will be seen that the relations between the public and private sectors in India are those of joint legatees of a vast undeveloped and unencumbered estate.

EMPLOYMENT AND UNEMPLOYMENT IN THE INDIAN ECONOMY: PROBLEMS OF CLASSIFICATION, MEASUREMENT, AND POLICY

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Problems of employment in India are complex both in form and content. This complexity can be traced to a number of factors, such as the predominance of households as units of production, the rapid growth of population, the nature and pattern of employment in agriculture (still the main source of livelihood), and the developments of the last half-century or so, affecting the institutional and technological basis of the economy.

Broadly speaking, three problems are usually identified in this context. First is the problem of partial unemployment in the economy, i.e., idleness enforced by circumstances on a large part of the available working population for some part of the year, month, or day; this is best described as open underemployment. Secondly, there is the problem of very low productivity, i.e., productivity being so low in the case of some of those who are nominally engaged in work (and believe themselves to be fully or partially employed) that, if judged by the criterion of their net contribution to the social output, they would seem to be in effect unemployed; this is often referred to as the disguised unemployment in the economy. And thirdly, there is the full, continuous, and open unemployment of a part of the available working force; this kind of unemployment, insofar as it exists, bears much the same characteristics as unemployment in developed, industrial economies.

It is possible to approach these problems from two points of view. From the point of view of the individual members of a community, and in the short period, a problem of employment, as such, emerges only under two circumstances: when they seek work for increasing their income and are unable to find it, or when work is available but on terms that are less satisfactory than for similar work elsewhere in that community (due to differences in bargaining power). Essentially, this kind of problem reflects failure of the economy to provide the means by which, even within the accepted "rules of the game", the members of the community, in their individual capacity, can increase their satisfaction of material wants. We may, if we like, confine ourselves to such problems of employment which, severally or in their totality, come in the way of stability and smooth functioning of that society. In fact, the meaning and significance normally attached to problems of employment is based on this kind of approach.

Alternatively, however, it is also possible to approach problems of employment from the point of view of the community as a whole (assuming that it can be done) and over a longer period. In this case, neither the felt needs and actual responses of its members, in their individual capacity, nor the existing "rules of the game" need necessarily be binding considerations in determining the scope of the problems. One could apply independent norms about capacity for work, adequacy of employment, productivity, etc., and take up the problems that arise

in consequence. This is an approach commonly made to employment problems in the context of underdeveloped economies with apparently large reserves of underutilized or inefficiently utilized labor.

These two ways of approach are, each in its own way, legitimate and proper, given the appropriate assumptions. Both are certainly relevant in the Indian context. In view, however, of the different assumptions implicit in each case--and particularly in order to distinguish the differences in policy and means of implementation which follow from the differences in assumptions--it may be analytically useful to make a distinction between the two, i.e., between problems of employment in the conventional sense and problems of manpower mobilization in the context of economic development.

I

Let us first consider problems of employment, in India, in the conventional sense, and see how far we can concretize them. It will be obvious that the problem of disguised unemployment, as we have defined it earlier, is excluded by the initial assumptions, since what we are concerned with is not the size of the net contribution (however small it might be) to the social product as a result of employment, but the volume of unsatisfied demand for work opportunities considered as necessary by individuals for their livelihood. For similar reasons, we are also not concerned with underemployment insofar as those underemployed do not consider it necessary to work. (This would exclude, for instance, women who, in a given social setup, engage themselves only in purely domestic work, as well as both men and women who are sufficiently satisfied with their existing income not to seek additional work.) In other words, what we have to try and concretize is only the unsatisfied demand for more work, of a gainful kind, on the part of those who are either underemployed or total unemployed.

Right at the outset, however, we are faced with a problem which makes it difficult to assess the volume of unemployment in India, even in this limited sense. It is posed by the importance of households as production units in the Indian economy. Production within households is based primarily on family labor, and most members of working age are drawn into it in varying degrees. This makes it difficult even to distinguish very clearly the working force in these units. The demand for more gainful work, insofar as it is felt by members of these households, may also be, in part, only for such work as can be made available within the households; it does not, therefore, constitute a corresponding supply of labor in the open market, even within, say, the precincts of the villages in which the households are located. Moreover, some of those who are prepared to work outside the households may not be openly seeking it (because they know it is not available), and hence they too may not be easy to identify. In the circumstances, any estimate of the volume of unemployment in this sector, in order to be meaningful, must take into account the basic sociological factors, including the attitudes created by the lack of employment opportunities, and aim at reflecting as fully as possible the differences in shade as between different types of demand for work, and not merely at providing an overall quantitative figure.

Not sufficient empirical study of these aspects of the problem has, however, been undertaken in India, in a systematic way, to attempt any firm estimates or even reasonably firm hypotheses on which such estimates can be based. We have

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Table 1. Size of Families and Employment per "Earner-Worker" off the Farm, 1955-56*

Size of Holdings (Acres)	Size of Families (number of members)			Employment (in units of eight hours)		
	West Bengal	Uttar Pradesh	Punjab	West Bengal	Madras	Punjab
0 - 1.25	4.6	)	)	78.8	-	)
1.25 - 2.50	5.9	) 6.1	) 4.5	54.4	63.0	) 4.3
2.50 - 3.75	6.7	)	)	42.7	26.0	)
3.75 - 5.00	7.0	6.5	)	34.7	-	)
5.00 - 7.50	9.3	6.5	6.9	12.4	16.0	1.1
7.50 - 10.00	9.2	7.1	)	17.9	5.0	-
10 - 15	13.9	6.8	) 7.8			
15 - 20	)	9.5	)			
20 - 25	)	14.1	)			
25 - 30	) 14.7	)	) 10.5			
30 - 40	)	) 14.2	)			
40 - 50	)	)	)			
50 and above	)	)	8.5			

* A worker is defined, in these farm management studies, as one who earns an income, however small, and whether paid in cash or kind. Those who participate in the family occupation without being actually paid for the work are, therefore, excluded. Since employment off the farms invariably yields an income, the data regarding such employment are, however, not vitiated by this rather restricted definition of a worker.

only scattered bits of information from case studies in particular areas; on the basis of these, the most that can be ventured are tentative statements on certain aspects of the problem.

There is, for instance, some evidence that the size of agricultural households increases with the size of their holdings, and that demand for employment outside the holdings tends to increase as the size of the holdings becomes smaller.[1] (See Table 1.)

There exist also independent data on the size distribution of "operational holdings" in land;[2] an operation holding is defined as "all land that is directed or managed by one or more persons, alone or with the assistance of others, without regard to title, size, or location," and includes, therefore, "all parcels of land within the scope of a distinct unit of technical and economic management for cultivation or other purposes."

Table 2. Percentage of Rural Households Operating Land below Specified Size and Cumulative Percentage of Area Operated by Them

Specified size of household operational holding (in acres)	Cumulative percentage of households and of area operated in holdings below specified size	
	Households	Area
0.0	6.34	-
1.0	40.23	1.25
2.5	54.80	5.93
5.0	70.71	16.79
7.5	79.95	27.31
10.0	85.58	36.42
15.0	91.11	49.00
20.0	94.42	59.71
25.0	96.09	66.72
30.0	97.28	72.81
50.0	99.09	85.57
Over 50.0	100.00	100.00

It will be seen that more than 70 percent of rural households have holdings of less than 5 acres and thus fall in the range within which, in terms of the data presented earlier, the demand for employment outside the households is greatest.

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1. J. P. Bhattacharjee, ed., Studies in Indian Agricultural Economics, Bombay, 1958, Ch. VI, "Employment of Manpower in Agriculture". The data given are based on farm management studies conducted in villages selected on a sample basis in two contiguous districts in each of the states indicated.

2. National Sample Survey No. 10. "First Report on Land Holdings, Rural Sector", Sankhya, Vol. 19, Parts I and II.

It may be noticed in passing that, in the smaller holdings, since the size of the families is itself small and the employment opportunities within the households limited, a larger proportion of those available for work (of a non-domestic character) are also likely to fall in the category of "earners", if these are defined (as in the Census of 1951 and also in the farm management studies referred to earlier) as persons who secure an income, no matter how small. For the same reason, in the larger holdings, the application of the "income" (or "earner") criterion for the determination of the labor force is apt to result in great underestimation.

Some of the households with very small holdings--particularly those below 2.5 acres--are so dependent on outside employment that their working members are usually treated, along with the totally landless, as agricultural labor rather than as self-employed cultivators. The difference is only one of degree, since some members offer themselves for outside employment even from the larger holdings, while those from the smaller holdings who offer themselves for employment outside are also partly self-employed. A clear-cut distinction is therefore difficult to make. But if all those whose work as agricultural laborers accounted for more than one-half of their total number of days of work during a year are treated as such, it would appear that agricultural labor constitutes about 12 percent of the rural population.[3]

The above estimate involves perhaps some measure of overestimation, but it might not be far off the mark to place the total number of persons in the rural sector depending primarily on wage-employment at around 30 million, in a total rural population of about 300 million.[4] It is among these persons that unemployment and underemployment exist in their most open form in the rural sector.

The class of agricultural labor, as identified above, is distributed very unevenly over different regions in India. The heaviest concentrations are in the South (accounting, in certain areas, for 40 to 60 percent of the rural population); they are most sparse in Northwest India (where they form, generally, less than 10 percent of the rural population). These regional differences have been attributed to different systems of land-tenure prevailing over the last century or so (affecting the rate of alienation of land by small holders),[5] but undoubtedly, they are also due to regional differences in the density of population affecting man-land ratios.

In the absence of trade-union organization in the agricultural sector, we should expect excess demand for employment to be reflected, at least partly, in downward adjustment of wage rates. That, in fact, it has this effect in rural India is suggested by regional differences in wage rates which, broadly speaking, correspond to the regional differences in the distribution of agricultural labor. Thus, in

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3. Government of India, Ministry of Labour, Agricultural Labour Enquiry, Delhi, 1950-51. See also Daniel and Alice Thorner, "Agricultural Manpower in India: Labourers", Economic Weekly, Vol. IX, November 9, 1957, pp. 1443-1449.

4. The estimates are for 1951.

5. S. J. Patel, Agricultural Labourers in Modern India and Pakistan, Bombay, 1952.

regions where agricultural laborers are around 10 percent or less of the rural population, wage rates also are found to be generally around Rs. 2 a day or over; where they are above 30 percent of the rural population, wage rates are generally between Rs. 1 and 1.5 per day, or even less.[6]

However, the regional differences in wage rates may be due to differences in productivity, reflecting partly the variations in the man-land ratio. It would also seem that wage rates do not usually fall below a certain level, however considerable the pressure in the labor market; the reason presumably is that, below that level, the wage is not adequate to meet what is considered in a given setting the minimum requirements of a working person. (This empirically observable fact, incidentally, lends support to the "classical" concept of a subsistence wage.) Moreover, alongside differences in money wage rates, there are usually differences in the prices of wage goods, as also differences in consumption requirements (e.g., due to climate). The differences in wage rates cannot therefore be regarded as a wholly satisfactory index of the pressure of excess labor supply in different regions.

A better index to the volume of excess supply of labor appears to be the amplitude of seasonal variations in wage rates within each region or sub-region. There are, as is well known, wide seasonal variations in agriculture in the demand for labor. These provide, as it were, in each area a kind of ready-made laboratory demonstration, year after year, of the response from the side of supply to changes in demand. In regions where the unsatisfied demand for labor is considerable, even at the "subsistence-wage", the rise in the wage rate in the busy season must be expected to be relatively less than in regions where the excess supply of labor is not so considerable.[7] That this, in fact, is so is indicated by such data as are available regarding seasonal variations in wage rates in different regions.

Table 3 summarizes the data regarding seasonal variations in wage rates, for men and women separately, for selected districts in three different regions; some of the relevant characteristics of each region are also indicated. It will be noticed that the amplitude of fluctuation is not only lowest in the region which has a high proportion of agricultural labor families and not very considerable employment opportunities, but is in all regions greater for female than for male labor (indicating lower wage-elasticity of supply in the case of the former).

In using and interpreting variations in wage rates (both over space and time) as indices of employment in rural labor markets, it is important, however,

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6. A wage rate of Rs. 1 a day, even assuming that two persons in a household of five members find employment at this rate for 300 days in a year, will yield a total income of only Rs. 600 per annum for the whole family; this is only about two-fifths of the income that can be imputed to a family of this size at the present (and admittedly low) average per capita income, in India, of about Rs. 300 per annum. See also V. M. Dandekar, Use of Food Surpluses for Economic Development, Gokhale Institute of Politics and Economics Publication No. 33, Poona, 1956.

7. K. N. Raj, Employment Aspects of Planning in Underdeveloped Economies, National Bank of Egypt Fiftieth Anniversary Commemoration Lectures, Cairo, 1956.

Table 3. Seasonal Variations in Daily Wage Rates

	Hooghly District (West Bengal)		Coimbatore and Salem Districts (Madras)		Amritsar and Ferozepore Districts (Punjab)	
	Men	Women	Men	Women	Men	Women
July	1.61	1.48	1.00	0.54	2.35	1.42
August	1.65	1.50	1.01	0.58	2.38	1.46
September	1.63	1.41	0.95	0.53	2.36	1.55
October	1.53	1.36	0.97	0.49	2.34	1.50
November	1.49	1.29	0.97	0.51	2.32	1.60
December	1.63	1.31	0.95	0.51	2.28	1.60
January	1.57	1.32	0.97	0.52	2.28	1.60
February	1.53	1.25	0.95	0.49	2.21	1.60
March	1.46	1.17	0.93	0.48	2.30	1.62
April	1.40	1.08	0.94	0.50	3.25	2.50
May	1.40	1.17	0.98	0.53	3.20	2.50
June	1.73	1.48	0.98	0.51	2.20	1.71
Range of seasonal variation (expressed as percentage of lowest rate reached)	19.1%	38.9%	8.6%	20.8%	47.7%	76.1%
Agricultural labor and dependents as percentage of agricultural population in the sample villages	20.2%		15 to 18%		12.0%	
Other reported characteristics of the sample villages	1. General shortage of labor due to alternative avenues of employment in industries in neighboring urban areas. 2. Women do not normally offer themselves for wage labor in agriculture, but are drawn on in periods of labor shortage. 3. Considerable seasonal migration of labor into the region from neighboring surplus areas.		1. "Agricultural labor is available in plenty at all seasons in almost all the villages."		1. Great dearth of labor at the time of harvesting and threshing.	

Source: Studies in the Economics of Farm Management, 1954-55.

to keep in mind that a considerable proportion of the agricultural labor class is "un-free", in the sense that they do not possess, or have yielded (in one way or another), the right "to accept or reject the conditions and wages offered by the employer", and sometimes even "to leave unconditionally at the end of (a) specific period." Such labor is often described as "attached labor" (i.e., labor attached to particular farms), as distinguished from "casual labor". The criteria on which agricultural laborers have been classified, in investigations to date, as between these two sub-groups, have not, however, covered important aspects of the relationship between employers and employees in the rural sector bearing on this aspect of the problem;[8] the data now available regarding both the number and the distribution of "attached labor" are in consequence not very reliable.[9]

Apart from inferences that may be drawn from the relative level and behavior of wage rates, a more direct measure of the extent of unsatisfied demand for employment would be the number of days on which those who seek work of a gainful character fail to find it. However, for a host of reasons, such as the combination of self-employment with wage-employment in varying degrees among the smallholders, the manner in which work is organized in agriculture in different seasons, the various kinds of contracts between employers and employees that are entered into in this sector, and other sociological factors, data regarding days of actual employment and unemployment are difficult to collect, and even more difficult to interpret when they are collected.

The Agricultural Labour Enquiry, conducted in 1950, estimated the number of days of unemployment among agricultural laborers at between 50 and 150 days per annum for different areas (in some areas it was a little more and in others a little less); but the conceptual and other limitations of the data collected have been sufficiently emphasized in the Enquiry not to place too much reliance on these results.

More recently, an attempt has been made, in the National Sample Survey, to estimate the "intensity of employment" in the rural sector.[10] The following

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8. "We have to deal with periods of employment ranging from a day to a lifetime, with conditions all the way from full freedom to near-serfdom, with payment in regular cash wages as well as traditional harvest shares plus perquisites in kind, with formal written contracts and with oral understandings, with debt-bondage and with tie-in land allotments." Daniel Thorner, "The Agricultural Labour Enquiry: Reflections on Concepts and Methods", The Economic Weekly, Vol. VIII, June 23, 1956, pp. 759-766. Also see Daniel and Alice Thorner, "Types of Employer-Labourer Relationships in Indian Agriculture", The Indian Journal of Agricultural Economics, Vol. XII, No. 2, April-June 1957.

9. Daniel and Alice Thorner, "Agricultural Manpower in India: Labourers", op. cit.

10. Indian Statistical Institute, Report on Sample Survey of Employment and Unemployment, May-November, 1955, National Sample Survey No. 13, Calcutta, 1958.

table shows the data collected regarding "the actual hours at work and the additional hours available for work in a week" for "gainfully occupied persons"[11] in rural households.

Table 4. Intensity of Employment and Underemployment in the Rural Sector

Intensity of employment (weekly hours of work)	Percentage Distribution of the Gainfully Employed		
	Male	Female	Total
Nil	4.92	6.95	11.87
1 - 7	0.83	0.86	1.69
8 - 14	2.04	1.87	3.91
15 - 28	6.08	5.42	11.50
29 - 42	10.59	6.73	17.32
43 - 56	24.78	7.89	32.67
57 - 70	14.58	2.54	17.12
71 and above	3.56	0.36	3.92
Total	67.38	32.62	100.00
Underemployment (weekly hours available)			
Nil	56.49	26.05	82.54
1 - 7	1.03	0.52	1.55
8 - 14	2.15	1.03	3.18
15 - 28	3.42	1.82	5.24
29 - 42	1.99	1.07	3.06
43 - 56	1.81	1.77	3.58
57 - 70	0.30	0.27	0.57
71 and above	0.19	0.09	0.28
Total	67.38	32.62	100.00

The report on this survey admits that the concept of "hours available"[12] introduces a subjective element, but concludes that, nevertheless, "the proportion of gainfully employed persons who are available for additional work for 29 and more hours a week (that is, more than 4 hours work a day in the average)," which

11. "Persons with gainful work", in this Survey, have been taken to include employees (including apprentices), employers, "own-account workers", and "unpaid family enterprise workers", and are estimated at about 44 percent of the total rural population.

12. Presumably, what was recorded was the opinion of those covered by the Survey as to how many hours of additional work they could put in; it is not clear whether this is the average for the year or for only part of the year.

amounts to 7.49 percent, may be taken as an estimate of "persons who suffer from acute underemployment".

These data will give some idea of the difficulties of measuring and interpreting data on employment (and unemployment) in the rural sector. The different criteria that have been adopted for estimating underemployment (in some cases, the number of days or hours during which the "gainfully employed" persons are seemingly idle, and in others the number of days or hours for which they would like to have additional employment), the failure to distinguish between employment within households and employment outside, and above all the attempt to measure the idle labor available without reference to any particular wage rate, can lead to only one conclusion: that such data as are available now regarding these have no clear economic content or operational significance and can only be regarded, at best, as hotch-potch statistical aggregates which can be interpreted in a variety of ways.

II

In the urban sector of the economy, the problem of estimating the labor force and the unemployed is in some respects less complicated. Households as units of production are not quite so important as in the rural sector, and even in the spheres in which they do function in this way, the participation of women and children is much less, which makes it easier to demarcate the economically active from those who are engaged in purely domestic occupations or are totally inactive.[13] Moreover, employment in the urban sector is less seasonal than in the rural sector (over 90 percent of the "gainfully employed" in the former being employed throughout the year).

According to the National Sample Survey, about 32.6 percent of the urban population are "gainfully employed".[14] A fifth of this number is reported to be in the primary industries (mainly in the smaller towns, in which agriculture, including livestock, still occupies an important position), about a third in the secondary industries (i.e., manufacturing, construction, etc.), and the rest in tertiary industries (i.e., services). Of the gainfully employed in these industries, 54 percent are classified as employees (working on a wage or a salary), about 35 percent as "own-account workers", and about 9 percent as "unpaid

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13. According to the National Sample Survey, referred to earlier, less than 50 percent of those "gainfully employed" in the urban sector are employed in "households", as compared to over 75 percent in the rural sector. The sphere in which "households" are most important in the urban sector is trade and commerce, where they flourish as small retail shops. As regards women among the "gainfully employed", they account for only 11.6 percent of the females in the urban sector, as compared to 32.6 percent in the rural sector.

14. This includes, as for the rural sector, employees (including apprentices), employers, "own-account workers", and "unpaid family enterprise workers". These "gainfully employed", plus the unemployed (i.e., those whose "major activity" is "seeking work"), constitutes, according to the concepts used in the Survey, the total labor force.

family enterprise workers" (the remaining 2 percent being employers). Persons classified as "unemployed" are estimated at about 2 percent of the urban population, which means that approximately for every sixteen persons "gainfully employed" in this sector there is one "unemployed".[15]

There are three features, however, of the employment pattern in the urban sector which are important to notice:

1. Though about a third of the "gainfully employed" in this sector are engaged in manufacturing and construction industries, less than a twelfth of the total is employed in large-scale establishments (i.e., establishments using power and employing 10 or more workers, and those which do not use power but employ more than 20 workers, both of which are covered by the Factories Act).

2. The tertiary industries absorb almost half of the total "gainfully employed" in this sector (14.2 percent in commerce, 7.7 percent in transport and communications, and 24.5 percent in "services" and "activities not specified").

3. Nearly one-half of the persons employed in manufacturing, three-fourths of those in commerce, one-third of those in transport and communications, one-fifth of those in services, and one-half of those in "activities not specified" are employed in "household" enterprises.

It is therefore not surprising that, apart from the "unemployed" in the urban sector, there is also underemployment, though judged by the criteria regarding "intensity of employment" used in the National Sample Survey, it appears to be less than in the rural sector.

Table 5. Intensity of Employment in the Rural and Urban Sectors

Intensity of Employment ("weekly hours of work")	Percentage Distribution of the Gainfully Employed by Hours of Work	
	Rural Sector	Urban Sector
0 - 7	13.56	9.23
8 - 14	3.91	2.87
15 - 28	11.50	9.37
29 - 42	17.32	18.06
43 - 56	32.67	39.90
57 - 70	17.12	14.47
Over 70	3.92	6.10
Total	100.00	100.00

15. The unemployment of the great majority of even these persons, in the u sector, is, however, not as continuous and complete as is usually the c in advanced, industrial economies.

A feature of the open unemployment in the urban sector, which is perhaps responsible for its often commanding more attention than other problems of employment in either sector, is that nearly four-fifths of the "unemployed" are literate, of whom about a third are estimated to be educated up to the school-leaving stage (i.e., matriculates) and beyond. Those educated up to the school-leaving stage and beyond, and remaining unemployed--who are usually referred to in India as the "educated unemployed"--number a little over 300,000 in the urban sector; more than three-fourths of them are reported to be seeking only employment involving non-manual work--in other words, "white collar jobs".

III

It will have been obvious from the last two sections that, though difficult to quantify in precise terms, unemployment even in the conventional sense is considerable in India. In the rural sector, taking into account only those who can be regarded as in the working force in the agricultural labor class and who obviously seek work in the open market, it is probable that, on the average, they fail to find employment at the current wage rate for one-fourth to one-third of a working year (of 300 days), if not for even longer periods; this would be equivalent, in effect, to the total unemployment of approximately 4-5 million persons at the very minimum. Then there is the open unemployment (including underemployment) among those in the rural sector who are not classified as agricultural laborers but may nevertheless be seeking work; this too may be very considerable, since the "non-agricultural labor" classes account for about 88 percent of the rural population. In the urban sector, where wage and salaried employment is more general than in the rural and employment available is less seasonal, the unemployed (i.e., whose main occupation is "seeking work") has been estimated at about 1.5 millions in 1955 (of which about a fifth comprised the "educated unemployed"). The number openly unemployed in the economy can therefore be said to be the equivalent of not less than 5-7 million; it might be more.

If one were to estimate how many who are now economically inactive or semi-active could be taken away from wherever they are without resulting in a contraction of output,[16] the "labor surplus" in the economy will undoubtedly appear to be much larger than the open unemployment now evident. The additional labor that would be forthcoming if certain norms were fixed (and enforced) in regard to hours of work; the increase in the working force that would result if the bulk of the female population were also drawn into economic activity; the labor that could be saved through changes in organization and techniques--all these would swell the potential surplus available for developmental purposes.

An estimate of the potential labor surplus can have no meaning, however, except in a clearly-defined context. The nature of the sanctions behind the norms fixed for hours of work, the political and social forces set in motion to draw out both male and female labor, and the precise changes in organization and technique that are considered feasible at a given moment of time can, each, make a considerable difference to the surplus that actually emerges. When there are a variety of alternatives in regard to these measures, any estimate can obviously appear as good as any other and may therefore, in fact, serve no better purpose

16. Some changes in organization are, of course, implied.

than merely impressing, with an astronomical figure, the amount of labor that could be secured for developmental purposes in an apparently overpopulated country.[17]

IV

Before examining the policies that have been formulated to meet the problems of employment outlined briefly in the preceding sections, it is necessary to consider also the factors underlying the emergence of these problems in their present form and magnitude.

The rate at which the pressure on employment opportunities has grown in India over the last few decades is usually attributed to growth of population. This is obviously one of the contributory factors. But to imply that it is the only factor responsible, or even the most important factor, may not be altogether correct.

This is because there have taken place in India over the last century very considerable institutional and technological changes. Thus, following the introduction of the British legal system, which made land not only a marketable asset (for the first time in India) but made it possible for individuals within collective units to demand their individual shares, the "joint family" system that had prevailed earlier (which, with all its limitations, had provided a kind of social insurance) broke down rapidly; there also took place, with the general spread of the market economy, a steady displacement of smallholders from land. To this was added the displacement of producers from traditional occupations (such as weaving) due to competition of new techniques. The number of those--previously sheltered within the older social and economic framework--who were thus compelled to seek new avenues of employment has perhaps contributed in even larger measure to the pressure in the labor markets than the growth in population as such.[18]

According to a rough estimate based on the decennial censuses--and which claims to make some allowance for differences in the concepts used and in geographical coverage--the total population and the "working force" in the present territory of India increased by about 120 million and 25 million respectively between 1901 and 1951.[19] But the total urban population increased by about 35

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17. A number of attempts have nevertheless been made, from time to time, to estimate the labor surplus in India, which are of interest in the context in which they have been made. Tarlok Singh, Poverty and Social Change, London, 1945; Bhabatosh Datta, The Economics of Industrialisation, Calcutta, 1952; and M. L. Gupta, Problems of Unemployment in India, Rotterdam,

18. K. N. Raj, op. cit. .

19. "Occupational Pattern in the Indian Union, 1901-51". Unpublished paper prepared in the Labour and Employment Division of the Planning Commission, Government of India. The concept of "the working force" is subject to the limitations indicated earlier in this article.

million in the same period--due partly to migration from the rural sector, which has been estimated very roughly at about 16 million[20]--with a consequent increase in the "working force" in this sector by probably about 12 million (largely in non-agricultural occupations).

Table 6. Growth of Population and of the Working Force in the Indian Union, 1901-51 (in millions)

	Total			Urban	
Year	Population	% increase during preceding decade	Working force	Population	% increase during preceding decade
1901	235.5	-	117.3	26.9	-
1911	249.0	5.9	124.3	27.6	3.7
1921	248.1	- 0.4	121.4	29.8	7.1
1931	275.5	10.9	129.6	35.0	16.6
1941	314.8	14.5	122.5	45.6	31.4
1951	356.9	13.3	142.3	61.9	34.8

It would be a reasonable inference from the above that only about half of the increase in the "working force" during this period would have had to be accommodated in the rural sector. However, from such data as are available regarding the occupational distribution of the "working force" during the period, it would seem that the increase in the "working force" in "agriculture" (which must have been mainly in the rural sector) was almost of the same order as the increase in the "total working force", i.e., about 25 million. This suggests not only the possibility of underemployment in agriculture having grown during this period (of which, in fact, there is evidence, in the form of larger proportions of "earning" and "non-earning" dependents in this sector), but also of a decrease in employment in non-agricultural occupations in the rural sector (at least a part of which is likely to have been due to displacement). The aggregate increase in working force in agriculture undoubtedly conceals also a significant shift from self-employment to wage-employment (and therefore from latent to open unemployment) in the rural sector, consequent on the displacement of smallholders from land.

The data available regarding the displacement caused by technological change in industry are more firm than about the displacement from land caused by institutional factors.[21] The following table shows the numbers employed in

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20. "Urbanisation in India, 1901-51". Unpublished paper prepared in the Labour and Employment Division of the Planning Commission.

21. In 1872, Sir Thomas Munroe, as Census Commissioner, reported that there were no landless peasants in India. Since then, the Census Returns have shown a steady increase in numbers in the agricultural labor class--from 7.5 million in 1882 to 33 million in 1931. (Continued on next page.)

some of the industries in which competition between different production techniques is known to have taken place during the period 1901-51.[22]

Table 7. Numbers Engaged in Selected Industries (in millions)

	1901	1911	1921	1931	1951
Hand pounding of rice, manual dehusking, flour grinding, and milling of cereals and pulses	1.24	1.23	0.87	0.69	0.53
Vegetable oil pressing and refining	0.48	0.53	0.47	0.50	0.25
Leather, leather products, and footwear	1.14	1.07	1.00	0.87	0.76
Cotton textiles	3.24	3.02	2.64	2.72	3.03
Total	6.10	5.85	4.98	4.78	4.57

In view of the differences in the concepts and methods used both for estimating the "working force" and for occupational classification--for which adequate allowance is really difficult to make--it is important, however, to exercise great caution in interpreting the data given above. At best, they should be regarded as only suggestive of certain developments which, we know independently, have in fact taken place during this period.

The possibility that a large part of the increased employment opportunities in the urban sector, in the first half of the present century, only compensated for the decrease in employment elsewhere; the fact that this increase in employment opportunities in the urban sector has itself been largely in the tertiary industries; and the evidence that the growth in population in the rural sector has increased considerably the proportion of "dependent" members in agricultural families--all these suggest that, with continuing institutional and technological change, the pressure in the labor markets may increase significantly in the near future, even without further increases in population adding to the size of

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But the concepts used in each case vary very widely, and the data are not therefore comparable. A recent study on land transfers in Bengal between 1929 and 1944 has, however, this to say: "Landlessness increases through the expropriation of small peasants... 'middle peasants', by alienating part of their holdings, are demoted to the rank of 'small peasants'; and while the proportion of small peasants is thus increasing, the latter, in their turn, are themselves being more and more denuded of their small fragments." K. Mukerji, Problems of Land Transfer, Santiniketan, 1957.

22. Raj, "Occupational Pattern of the Indian Union, 1901-51", op. cit.

the "working force". The emancipation of women in the rural and urban sectors, of the "attached labor" in agriculture (to which reference was made earlier), and of "domestic servants" generally--all of which are now being spurred on by various social and political developments--can by themselves make a considerable difference.

In formulating employment policies, we need therefore to keep in mind the following considerations:

1. the considerable "open" unemployment that already exists, at even the prevailing low wage rates;

2. the possibility that further layers, from within the existing stock of labor, may soon topple over into the open market, seeking new employment, solely as a consequence of institutional and technological change, and without any planned effort at mobilization; and

3. the growth of population, which is estimated to be taking place now at a rate of 1.8 to 2.0 percent per annum.

V

It is inconceivable--more so, if steps are to be taken in the process of development to increase both productivity per unit of labor and productivity per unit of available land--that agriculture can support a much larger population than it does already; indeed, it might be necessary to siphon away part of the existing population, particularly in certain regions. This implies that opportunities for non-agricultural employment have to be increased very rapidly.

At the present rate of growth of population--and assuming that the ratio of those seeking work, out of the increases in population, will be the same as that of the estimated total "working force" to the total population now--additional employment will have to be found, at the minimum for 2.5 to 3 million persons per annum. This does not take into account the possible overflow from the existing stock, to which reference was made above. Even if we assume, therefore, that for every one person who found employment in the manufacturing industries, three can be absorbed in "services" of one kind or another, it will be obvious that additional employment will need to be created, every year, in the manufacturing industries for no less than .75 to 1.0 million persons. A rate and pattern of industrial development which can offer employment of this magnitude has to be aimed at almost immediately if the existing position is not to deteriorate rapidly.

The investment that will be required, both in manufacturing industries and in ancillary transport and other services, in order to provide employment of this magnitude, will inevitably involve demands of a large order on producer goods of various kinds, including machinery. But with the existing pattern of exports--concentrated in a few traditional lines--the prospect of importing the entire increase in requirements of producer goods, year after year, with increased earnings from exports, is not very promising. It is for this reason--and also because India has resources, as well as potentially large markets, to make possible domestic production at costs which compare favorably with costs

elsewhere--that the Second Five Year Plan has laid particular emphasis on the development of producer goods industries.

The emphasis on "basic industries" in the Second Plan is partly responsible for its relatively low employment potential in the short period. But viewed over a longer period, it is the logical consequence of a policy which seeks to increase employment opportunities at a rate that will be fast enough to absorb the potential increases in labor supply at rising levels of productivity.

Pending the development of industries at the rate indicated above, the scope for increasing employment opportunities is tied up largely with production of consumer and producer goods by techniques which offer higher employment per unit of capital and also help to save scarce capital in the process. Considerable, and needless, controversy has, however, been generated in this context as a result of the failure to recognize--on the part of both those who advocate rapid technological change and those who oppose it--the need to economize in the use of scarce capital resources, particularly when the main obstacle to increasing employment at rising levels of productivity is itself shortage of real capital.

Thus the use of manpower in investment projects, such as in irrigation reclamation, etc., would clearly save the real capital, i.e., machinery, for which it is in most cases an adequate substitute. On the other hand, mere construction of roads with manual labor, though it would create additional employment, does not necessarily create (or save) productive capital if there are no goods or persons whose movement over these roads would promote economic activity (such instances are, of course, rare). The use of machinery in investment activity when manpower is an adequate substitute, as well as the use of labor in public works which have no clear economic significance (neglecting others which have), are thus both cases of uneconomic use of labor.

However, though mistakes have been made in the choice of techniques in investment activity (and in the choice of investments themselves), the issues involved appear to be clearer here than in the case of consumer goods. The controversy in the sphere of consumer goods has taken the form of a debate on the relative virtues of "small-scale" and "large-scale" establishments, or of "labor-intensive" and "capital-intensive" units, and sometimes, even more confusingly, of "decentralized" and "centralized" units.

It is clear from an examination of available data that apparently "large-scale" and "capital-intensive" units do not necessarily use more capital per unit of output (though, to the extent that they rely more on imported equipment, the draft on scarce foreign exchange resources is generally greater than in the case of "small-scale" units depending on domestically-manufactured equipment). Similarly, being "small-scale" or "labor-intensive" does not necessarily mean that the units are economically inefficient. However, erroneous association of ideas, based often on mere visual observation or experience in particular fields, has been an obstacle to the formulation of a rational and consistent approach in this sphere.

The Second Plan embodied a policy directive that the pace of technological change in industries producing consumer goods should be so regulated as to avoid creating more unemployment on this account and also to prevent the existing capital stock in this sector from becoming immediately redundant:

> The deliberate regulation of the pace of adoption is related specifically to those spheres where the adoption of such technique is likely to cause unemployment of both existing capital equipment and labor. It is necessary to bring this out because of the erroneous impression... that the decision taken to reserve the bulk of increased supply of consumer goods to village and small-scale industries in the Second Five Year Plan is indicative of an opposition to technical improvement.[23]

The attempt to implement this policy generated considerable controversy, particularly in relation to the cotton textile industry, in which it was recommended that "production by mills and power-looms should be limited to the level already reached... and all the increased demand during the Plan period should be met by expansion of handloom production." The main issues raised by this controversy about the choice of techniques in cotton-weaving will illustrate the problems involved.

There are, broadly speaking, at least six different techniques existing today in India in cotton-weaving, which may be distinguished by their respective use of (1) throw-shuttle handlooms, (2) fly-shuttle handlooms, (3) "Banaras" semi-automatic handlooms, (4) cottage power looms, (5) factory non-automatic power looms, and (6) factory automatic power looms. The first has been rapidly getting displaced by the second, and it was this second technique that was recommended in the Plan. There were estimated to be 2 million handlooms in the country, of which 20 percent were idle; it was suggested that, if all the looms were worked for 300 days in the year (instead of 150 days and less, as was the case among even among those which were active), and each loom produced six yards per day, the output of the handloom sector could be increased from about 1550 million yards in 1955-56 to 3200 million yards by 1960-61.

Table 8 presents some rough estimates bearing on certain aspects of the alternative techniques[24] that are relevant to a choice between them from the economic point of view.

It will be seen that, while technique 1 maximizes the output-coefficient (and, in the circumstances of the Second Plan, would not also have required any additional investment in looms), it would cease to yield a profit (for further capital accumulation) when the wage rate touches Rs. 1.5 per day; beyond this wage rate, it can be sustained only by subsidy in one form or another (and it has in fact required such subsidy), involving the frittering away of surpluses emerging elsewhere in the economy which could alternatively be used for capital accumulation.

In the case of technique 2--which is relatively new and, as yet, found only in a few areas[25]--the output-coefficient is slightly lower; it would also have

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23. Government of India, Planning Commission, Report of the Village and Small-Scale Industries (Second Five Year Plan) Committee, October 1955, Delhi, 1956, p. 15.

24. We are excluding from the table the first technique listed above.

25. Government of India, Ministry of Commerce and Industry, Report of the Textile Enquiry Committee (September 1954), Delhi, 1955, Vol. I, p. 11.

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Table 8. Alternative Techniques in Indian Cotton-Weaving Industry and Some of Their Economic Implications*

Technique	Capital cost per loom (Rs.)	Output per loom per day (yds.)	Net value added per loom per year (Rs.)	Output coefficient	Labor required per loom per day (no.)	Rates of profit per loom per year (expressed as percentage of capital cost) at daily wages of: Rs. 1	Rs. 2	Rs. 3	Rs. 4	Rs. 5
1. Fly-shuttle handloom	30-50	6	450	9.0	1	150	Neg.	Neg.	Neg.	Neg.
2. "Banaras" semi-automatic handloom	200	20	1,500	7.5	1	600	450	300	150	0
3. Cottage power loom	1,500	30	2,250	1.5	1	130	110	90	70	50
4. Factory non-automatic power loom	4,000	80	6,000	1.5	1	143	135	128	120	113
5. Automatic power loom	10,000	80	6,000	0.6	$\frac{1}{8}$	60	59	59	59	58

* I am indebted to Mr. Amartya Kumar Sen for organizing the relevant data in this form. The underlying theoretical considerations are explained in his article, "Some Notes on the Choice of Capital Intensity in Development Planning", Quarterly Journal of Economics, Vol. 71, No. 4, November 1957, pp. 560-584.

For a discussion of other relevant considerations, in the Indian context, see also my article on "Small-Scale Industries: Problem of Technological Change", Economic Weekly, Vol. VIII, Nos. 14 and 15, April 7 and 14, 1956, pp. 420-421 and 435-438, and the ensuing controversy in that journal.

(Notes continued at bottom of next page)

required additional investment of about Rs. 55 million in order to increase the output of cloth by 1600 million yards. But the rate of profit per annum on this investment would have been as high as 450 percent, even at a wage rate of Rs. 2 per day, and would therefore have generated surpluses to sustain a much faster rate of development over the period of the Plan and subsequently.

Technique 4 would maximize the rate of profit only if the wage rate rises to Rs. 5 per day; and technique 5 becomes preferable only when it rises to Rs. 13 per day.

It will be clear, from the above, that there is an economic case for both techniques 1 and 2, in preference to the others, at the wage rates prevalent in India. If there is nevertheless a tendency to move towards the other techniques, it is partly due to imperfections in the capital and labor markets, lack of adequate knowledge about the alternative techniques available, and above all, deficiencies in the organization of marketing.[26] The choice between techniques 1 and 2, at wage rates above Rs. 1 per day, depends, obviously, on whether the decisive criterion is the output-coefficient (i.e., the volume of output per unit of fixed capital) or the rate of growth of capital made possible by it (i.e., the surplus over wage costs per unit of fixed capital).

However, while there is a case for the techniques specified in the Second Plan for cotton-weaving, the reverse is true in the case of a technique which has been specified for cotton spinning. Thus there is little doubt that the celebrated Ambar Charkha, on which considerable new investment is taking place in the Second Plan, is uneconomic by almost any criterion.[27] All that can be said for it is that labor producing something is better than its remaining idle and merely consuming; but when fresh investment is being made, it is obviously important to consider alternative possibilities and divert idle labor to those lines in which the contribution to output per unit of capital is significant enough to cover, at the very minimum, the additional consumption on account of increased employment.

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26. The movement towards automatic power looms is largely on account of competition in foreign markets; to the extent that exports have to be maintained and expanded, the Second Plan provides for change-over to this technique.

27. Amartya Kumar Sen, "A Short Note on the Ambar Charkha", Economic Weekly, Vol. IX, No. 42, October 19, 1957, pp. 1357-1358.

Notes on Table 8 (continued)

a. The estimates are based on the assumption that (1) the number of working days per year is 300; and (2) the net value added per yard is Rs. 1/4, and is the same for all techniques.

b. The second of the above assumptions means, in effect, assuming that (1) costs of depreciation and replacement are the same for all techniques; (2) the input of raw materials required per unit of output is the same for all techniques; and (3) despite the different quantities of raw cotton required, in the aggregate, under different techniques (due to differences in the total volume of output), costs of production of raw cotton do not differ.

There are thus some contradictions, in the implementation of policies which are by themselves rational and defensible. However, while they are there--and probably inevitable in a large development program which has to reconcile various conflicting points of view--the main problem in utilizing more idle labor in the production of both consumer and producer goods is the difficulty that has been experienced in increasing adequately the supply of foodgrains in order to meet the additional demands generated by larger employment and incomes. The income-elasticity of demand for foodgrains in India is high in the low-income groups,[28] and the pressure on available supply is therefore considerable under conditions of rising incomes.[29] The scope for increasing employment opportunities in the short-period (as well as in the long-period) is thus tied up very closely with the scope for increasing the output of foodgrains (as also the surplus marketed out of the output).

To the extent that increased employment (such as in irrigation projects, reclamation, weeding, etc.) itself helps to increase the output (and marketed surplus) of foodgrains, the process of expansion can of course become cumulative. But a variety of technical, organizational, and institutional considerations are involved in mobilizing idle labor effectively for these purposes. The "community projects" in the First and Second Plans, which were meant to break through some of these difficulties, have not shown so far any significant results, and to that extent the mobilization of unemployed (and underemployed) labor has also failed to make much progress.

There are also difficulties due to differences in the regional distribution of the unemployed labor. Agricultural labor is heavily concentrated in central and southern India, and the question therefore arises frequently, in a sharp form, whether the unemployed labor should be moved to areas where the availability of other resources offers the best opportunities for development, or whether the investment projects themselves should be so located as to carry employment to the areas where unemployment is most acute. Due to the various technical and social considerations involved, the choice is not always either clear or easy to make.

For these and other reasons, outlined above, the progress in dealing with problems of employment in India has not been very considerable to date. No doubt it is also too early to judge the success of some of the policies followed. But it is clear that the extent of success achieved, in meeting problems of employment, will determine to a very considerable degree the course of social, political, and economic developments in India in the coming years.

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28. There is some doubt as to its exact magnitude, but it is clear that it is not lower than 0.5 and may be as high as 0.8.

29. There is some evidence to suggest that, when additional employment is found for labor which continues to reside in "productive" households (i.e., households engaged directly in production, even if only partly so) in the rural areas, the extent of increase in consumer demand, as well as the pattern of demand, tend to be different from the case where they are compelled to migrate and set up new households elsewhere. K. N. Raj, Economics of the Bhakra Nangal Project (to be published shortly), Ch. 4.

THE CHOICE OF AGRICULTURAL TECHNIQUES IN UNDERDEVELOPED COUNTRIES*

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I

Most writings on the problem of choice of production technology are based (explicitly or by implication) on assumptions which apply more easily to industry than to agriculture.[1] A model of a different character seems to be necessary to discuss the issues involved in the choice of techniques of agricultural production in underdeveloped economies. In particular, one has to examine the implications of having a non-wage economy and also of having land as one of the dominant factors of production.

In most underdeveloped economies, agriculture is almost entirely a household operation. This is particularly true of countries like India. The cultivator's earnings consist of sales receipts minus production expenditures, rent, and interest payments. In contrast to a wage economy, in a situation of this sort the problem of choice of technology need not give rise to any conflict between maximizing immediate output and maximizing the rate of accumulation.[2] This holds

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* My thanks are due to Mrs. Joan Robinson, Mr. Hugh Hudson, Dr. Dipak Muzumdar, and Mr. Michael Nicholson for their comments and criticism.

1. See A. E. Kahn, "Investment Criteria in Development Programs", Quarterly Journal of Economics, February 1951; H. B. Chenery, "The Application of Investment Criteria", Quarterly Journal of Economics, February 1953; M. H. Dobb, "A Note on the So-Called Degree of Capital-Intensity of Investment", Economie Appliquee, 1954, reprinted in his On Economic Theory and Socialism, London, 1955; idem., "Second Thoughts on Capital-Intensity of Investment", Review of Economic Studies, 1956; Galenson and Leibenstein, "Investment Criteria, Productivity and Economic Development", Quarterly Journal of Economics, August 1955; Otto Eckstein, "Investment Criteria for Economic Development and the Theory of Intertemporal Welfare Economics", Quarterly Journal of Economics, February 1957; F. M. Bator, "On Capital Productivity, Input, Allocation and Growth", Quarterly Journal of Economics, February 1957; A. K. Sen, "Some Notes on the Choice of Capital Intensity in Development Planning", Quarterly Journal of Economics, November 1957.

2. See M. H. Dobb, "Second Thoughts on Capital Intensity of Investment", op. cit.; also "Some Notes on the Choice of Capital Intensity in Development Planning", op. cit., pp. 571-577, where the conflict in a wage economy is discussed. The conflict arises in a wage economy when the marginal increase in consumption resulting from a higher wages bill (due to an expansion of employment) exceeds the marginal increase in output (due to that expansion of employment). It is thus a distributional problem, which does not arise in a household economy.

true so long as the marginal propensity to save is positive, which seems a fair assumption to make. Even if the system is one of share-cropping (with the cultivator getting, say, a half of the net output and the land-owner the other half), the conflict need not be there. In these economies therefore the choice of an optimum technique is less complicated. In the rest of the paper it will be assumed that maximization of output is achieved without sacrificing future growth. This condition is likely to hold also for cooperative or collective farms run on a non-wage basis.

A second departure of this paper will be in introducing land as an important factor of production. Thus, even if labor and capital are both doubled, output (given the technique) may be less than doubled. This possibility of diminishing returns to scale (capital and labor) makes our choice of technique dependent on the absolute volume of production. Depending on the relative rates of diminishing returns, we may choose technique A for one scale of production and technique B for another. We may even choose a combination of techniques rather than employ one technique to produce the whole output.

Once land is introduced in our analysis, we have to distinguish between two types of capital goods--those which replace labor (e.g., tractors) and those which replace land (e.g., fertilizers). We may call them, for the sake of brevity, "laboresque" capital and "landesque" capital, respectively. This division is not watertight, and in some cases a capital good which is mainly laboresque may also raise productivity per unit of land. Deep plowing is perhaps a good example. Broadly speaking, however, our experience seems to suggest that while investment in fertilizers, or in irrigation, or in pest control, increases yield per acre considerably (without replacing labor), investment in machines like tractors, threshing machines, etc., is useful mainly in replacing labor (without raising yield per acre).[3] This dichotomy leads to some interesting policy problems which are discussed below in terms of a simple model.

II

In figure 1 we have four axes--west measuring capital investment; south, investment in "laboresque" capital; east, the quantity of labor necessary for cultivation; and north, the volume of agricultural output. We assume a watertight dichotomy between "laboresque" and "landesque" capital. We assume further that both laboresque and landesque capital goods wear away in one year. OC is the total amount of investment that can be made in a year, and the curve FED gives the volumes of agricultural product (to be called "corn" henceforth) at alternative levels of investment in landesque capital. The shape of the curve exhibits diminishing returns though the marginal product need not necessarily become zero (or negative). Some positive output (CF) is assumed for zero investment in landesque capital, for there is, after all, land. If BC is the amount of investment that is made in landesque capital, BE is the output. OB is the amount

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3. "While mechanization of farming operations improve considerably the yield per unit of labour, it does not necessarily increase the yield per unit of land." S. R. Sen's paper in the Proceedings on the Ninth International Conference on Agricultural Economics, London, 1956, p. 56. See also Joan Robinson, Accumulation of Capital, London, 1957, Book VI, p. 323.

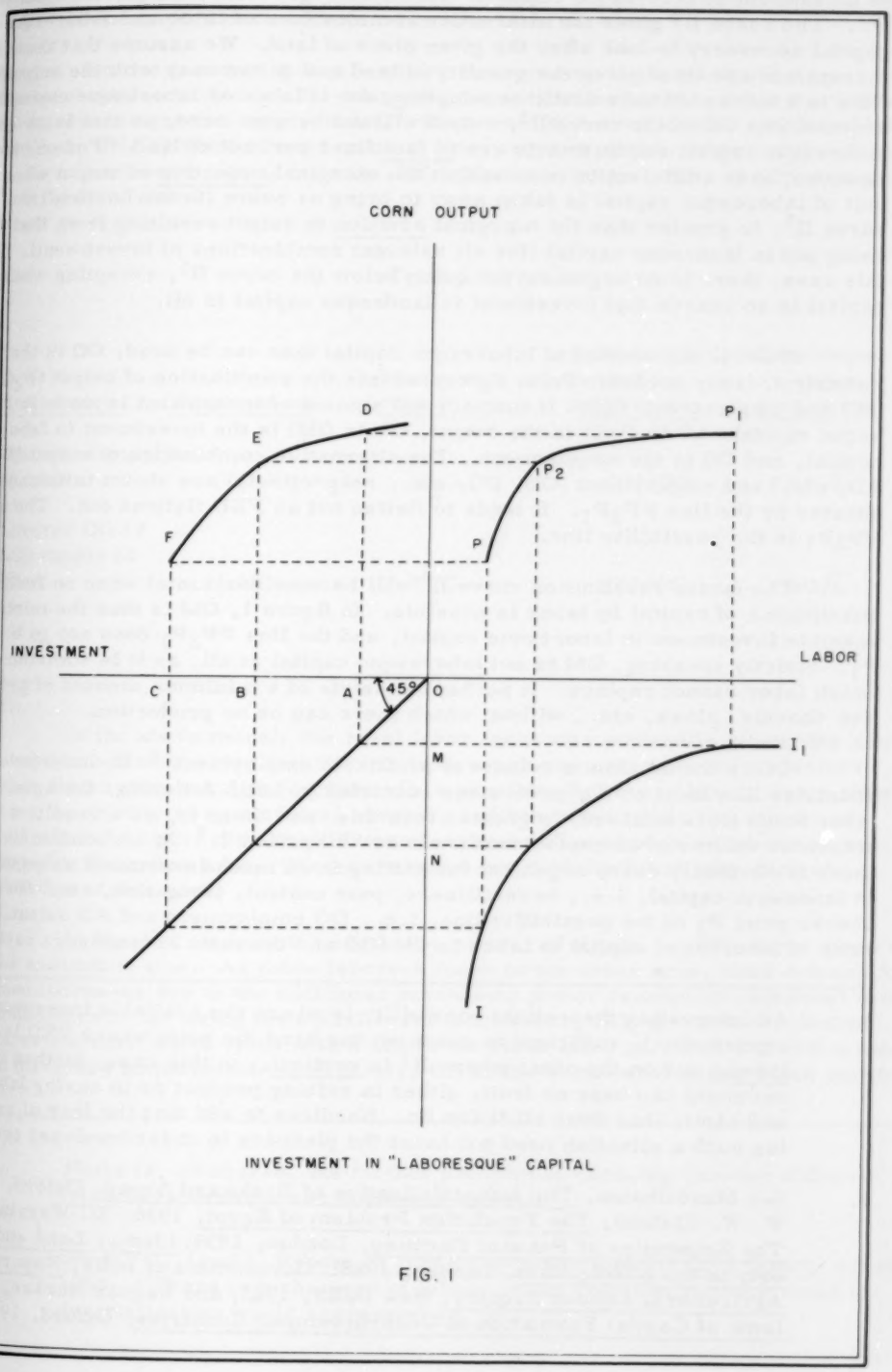
CORN OUTPUT
D
E
F
P
P2
P1
INVESTMENT
LABOR
C
B
A
45°
O
M
N
I1
I
INVESTMENT IN "LABORESQUE" CAPITAL

FIG. I

of investment in laboresque capital. With a 45 degree line, we get ON equal to OB. The curve II^1 gives the alternative combinations of labor and laboresque capital necessary to look after the given piece of land. We assume that these requirements are fixed given the quantity of land and do not vary with the output. This is a somewhat unrealistic assumption, for if labor or laboresque capital is reduced just below the curve II^1, output will not become zero, so that labor and laboresque capital requirements are in fact fixed per unit of land. For our model however, it is sufficient to assume that the marginal reduction of output when a unit of laboresque capital is taken away to bring us below (to the north of) the curve II^1, is greater than the marginal addition to output resulting from that unit being put in landesque capital (for all relevant combinations of investment). In this case, there is no argument for going below the curve II^1, excepting when capital is so scarce that investment in landesque capital is nil.

If ON is the amount of laboresque capital than can be used, OQ is the quantity of labor needed. Point P_2 represents the combination of output (P_2Q = BE) and employment (OQ). If instead, AC amount of investment is made in landesque capital, AD (= P_1G) is the output, OA (= OM) is the investment in laboresque capital, and OG is the employment. The alternative combination of output (BE, AD, etc.) and employment (OO, OG, etc., respectively) are shown in the northeast quarter by the line PP_2P_1. It tends to flatten out as FED flattens out. The curve PP_2P_1 is the possibility line.

The factor substitution curve II^1 will become horizontal when no further substitution of capital by labor is possible. In figure 1, OM is thus the minimum possible investment in laboresque capital, and the line PP_2P_1 does not go beyond P_1. Strictly speaking, OM is not laboresque capital at all, as it is something which labor cannot replace. It perhaps consists of a minimum amount of primitive shovels, plows, etc., without which there can be no production.

OG is the maximum volume of profitable employment.[4] In underdeveloped countries like India or Egypt or some countries in Latin America, the agrarian labor force (it is believed) is greater than this and there is, as a result, a considerable volume of unemployment (open or "disguised").[5] In a situation like this there is obviously every argument for putting in as much investment as possible in landesque capital, i.e., in fertilizers, pest control, irrigation, etc. We may choose point P_1 of the possibility line, i.e., OG employment and AD output. The ratio of laboresque capital to labor is OM/OG and the ratio of landesque capital

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4. An interesting theoretical possibility is where the available investment opportunity is sufficient to reach on one hand the point where FED is horizontal and on the other where II^1 is vertical. In this case, further investment can bear no fruit, either in raising product or in saving labor, and capital has done all it can do. Needless to add that the fear of reaching such a situation need not haunt the planners in underdeveloped countries.

5. See Mandelbaum, The Industrialisation of Backward Areas, Oxford, 1945; W. W. Cleland, The Population Problem of Egypt, 1936; D. Warriner, The Economics of Peasant Farming, London, 1939; idem., Land and Poverty in the Middle East, London, 1948; Government of India, Report of the Agricultural Labour Enquiry, New Delhi, 1945; and Ragnar Nurkse, Problems of Capital Formation in Underdeveloped Countries, Oxford, 1955.

to land is $AC/\overline{L}$, where $\overline{L}$ is the quantity of land. These two ratios give us the two relevant capital-intensities in this allocation problem.[6]

A more interesting case is where the economy has a labor shortage. In some countries in Africa, for example, the only way of getting labor for industry is to reduce agrarian employment.[7] If we want to leave only OQ amount of labor on land, ON/OQ should be the ratio of laboresque capital to labor and $BC/\overline{L}$ the ratio of landesque capital to land. BE is the corn output. The results are summarized in Table 1.

Table 1.

Assumption	Employment	Maximum output	Laboresque capital to labor ratio	Landesque capital to land ratio
Unlimited supply of labor	OG	P_1G	OM/OG	$AC/\overline{L}$
Limited OQ (< OG) supply of labor	OQ	P_2G	ON/OQ	$BC/\overline{L}$

III

In the above model, the rural labor force was externally given, the assumption behind it being that the limits to urban expansion depend on factors other than agricultural production. It is possible, however, that in some situations the volume of agricultural surplus, and hence indirectly the volume of agricultural output, may itself determine the number of people that can be employed in the urban area. We must change our model a bit to take care of a situation of this sort.

In figure 2 we have the northeast quarter of figure 1. PP_1 curve gives us the possibility line. As more laborers move to the urban area, total demand for corn increases due to the additional purchasing power created by additional urban employment. OF being the initial rural labor force, DD_1 gives us the demand curve for corn which rises with a fall in the rural labor force, i.e., with a rise in the urban employment. In figure 2, OL is the rural labor force which equates

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6. There is, of course, the further problem of choosing between different types of laboresque and landesque capital.

7. See W. A. Lewis, Report on Industrialisation and the Gold Coast, Accra, 1953. "There is a shortage of labour in the Gold Coast which rapid industrialisation would aggravate" (p. 65).

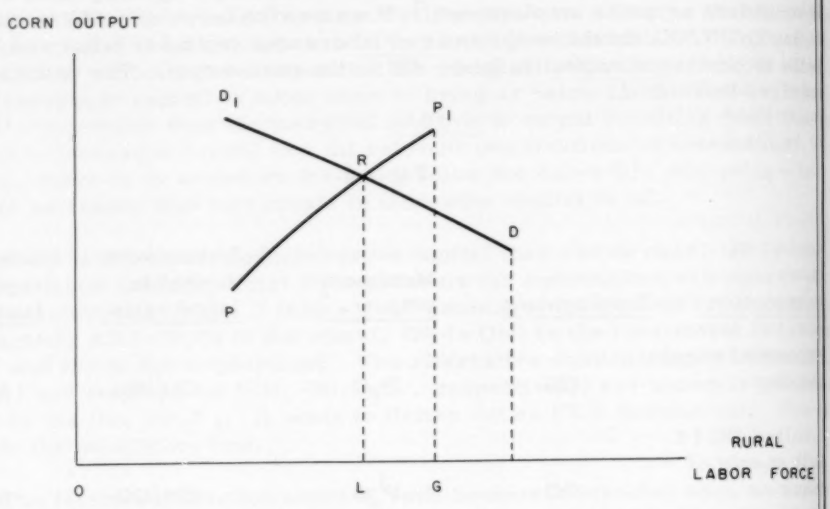
CORN OUTPUT
D1
P1
R
D
P
RURAL
LABOR FORCE
O
L
G

FIG. 2

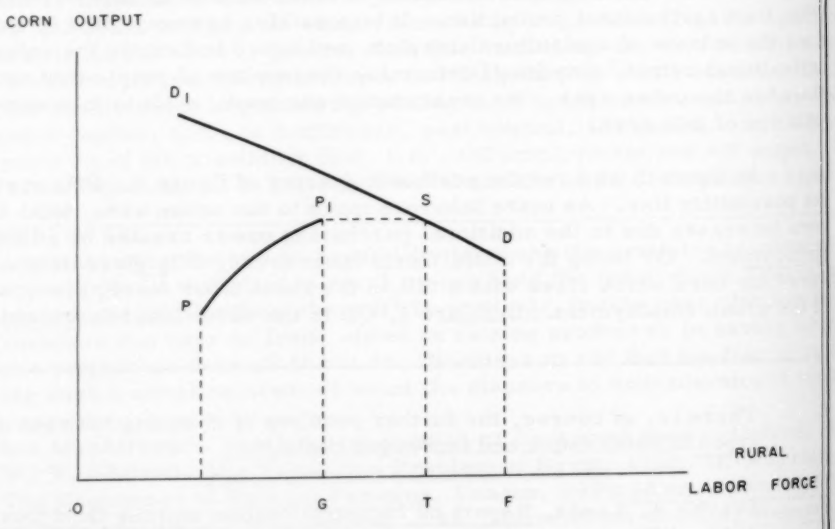
CORN OUTPUT
D1
P1
S
D
P
RURAL
LABOR FORCE
O
G
T
F

FIG. 3

demand and supply of agrarian output.[8] Thus FL is the volume of migration to the urban area, RL the output, and the capital-intensities corresponding to these can be found out from figure 1.

It is possible that DD_1 may lie wholly above PP_1, as in figure 3. In this case, we can transfer only FT number of laborers, for the corresponding demand is ST and the supply P_1G (= ST). GT number of unemployed (open or "disguised") rural people must continue to stay in the rural area. This problem is encountered in many countries like India or Egypt. In this case, the relevant capital-intensities are OM/OG for laboresque capital, and $AC/\bar{L}$ for landesque capital, as in the first row of Table 1.

We have worked out above the choice of capital-intensities both in the case where (a) agricultural output is not a bottleneck for urban expansion, and (b) agrarian output (and surplus) is the only bottleneck for urban expansion. A number of cases may be intermediate, with many bottlenecks including that of agricultural output. To tackle those cases, our model must be somewhat altered. We have also not brought in the offer of urban products which may affect the amount of agrarian output the rural population is ready to sell. This will allow variation of the curve DD_1, which can be lowered by offering more urban products.[9]

The above discussion has been conducted at a fairly elementary level, with rather simple assumptions, and our models certainly do not fit all cases of technological choice in agriculture. I think, however, they do indicate the sort of questions we have to ask in choosing techniques for agriculture, questions which are different from the ones usually asked in studies of technological choice based on assumptions that fit the industry well, but no agriculture. The nature of technological choice in a three-factor case seems to be very different from that in a two-factor economy, and it certainly demands a different technique of analysis, perhaps in the line indicated above.

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8. DD_1 may in fact give us the minimum demand for corn, i.e., the least amount of corn necessary to have a certain volume of urban employment. If the supply of corn for that urban employment is greater, as it is for any point between F and L, the extra supply of grain can be well looked after in a planned economy. In this case, OL gives us the minimum possible volume of rural employment (i.e., maximum transfer), and not the only equilibrium level. Choice of OL therefore involves a policy objective of maximum industrial employment.

9. For a study of the influence of rural-urban trade on industrial employment possibility, see my note, "Unemployment, Relative Prices and the Saving Potential", Indian Economic Review, August 1957.

ECONOMIC ACCOUNTING AND FAMILY FARMING IN INDIA[1]

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The University of Texas

It is widely realized in India, as elsewhere, that planning for economic development and the creation of a socialistic society require the collection of information and statistical data on a large scale. Since 70 percent of the people in India live by agriculture and the country as a whole barely feeds itself, planned development clearly calls for data on the present state of the agricultural economy, both as a benchmark for measuring the needs and the successes of the Plans and as keys to which measures of development are likely to be most fruitful.

Statistics for the nation and the constituent states have been published by the Ministry of Agriculture. The Indian Council of Agricultural Research and the agricultural colleges and the universities have been making surveys of village and farm business for 40 years, although on a limited scale. Under the First and Second Five Year Plans, the Research Programs Committee of the Planning Commission has been organizing a much wider range of research into farm business practices. It is with some of these projects that the present paper concerns itself.

Our problem is what kind of farm management research is most appropriate to the present conditions of Indian agriculture and will be most relevant to planning decisions. Are cost accounting, farm-management, input-output techniques taken from the methods of agricultural economics in the United States and Great Britian relevant to, or do they reveal the practices and problems of, the Indian peasantry?

Current Indian Research

Apart from the continuing government program of crop estimates and market reports and the random sampling surveys of the Indian Statistical Institute, the main effort of current Indian farm business research is concentrated in two programs: a three-year project at six centers[2] to establish the cost of production

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1. This paper is based on a year's experience working with farm accounts in India at the Gokhale Institute, Poona, and the Punjab Board of Economic Inquiry, Ludhiana, for the India Project of the Center for International Studies, Massachusetts Institute of Technology. I am also indebted to Dr. Charles H. Berry of Yale for his critical reading of the drafts of this article.

2. In the Punjab, in Uttar Pradesh, in Madhya Pradesh, in Bombay, in Madras, and in West Bengal.

of various crops, and farm incomes and outlays; and a longer-term project of village surveys and re-surveys at five-year intervals at four Agro-Economic Centers.[3]

Each Agro-Economic Center is independent of the others and free to try such methods as it chooses. The objectives are to discover better means of measuring, and more accurate measures of, rural socio-economic data. The frame of reference is much wider than in the case of the farm costing centers, for the Agro-Economic Centers are interested in all aspects of rural life. The problem dealt with here arises most clearly in the work of the first set of projects dealing with the costs of farm operations and of producing various crops.

The particular farms examined in the farm costing projects were selected in a multiple stage process of random sampling. First districts, then villages, and finally, in stratified samples from the villages, two hundred farms, twenty in each village, were chosen for analysis by each center. Farm accounts for the farms in each village are kept by a field worker who resides in the village throughout the year.

The same six centers conduct parallel, overlapping surveys by the "occasional questionnaire" methods. A field worker goes to the village three times a year and collects the same kind of data as the resident field worker, but gathering the data not from continuously kept records but by asking each cultivator what has happened over the preceding months. Some of the respondents are the same as those for whom continuous records are kept; others are different. The object is to see if the extra costs of keeping a continuous record are justified by the greater accuracy of this method as against the occasional questionnaire. It is of course assumed that the results of continuous record-keeping supply accurate data, and the merits of the questionnaire system will be judged by how closely it approximates the more costly system. If both systems give similar results, the less expensive system can be used in the future.

The contention here is that the efforts of the farm costing centers, and of the Agro-Economic Centers insofar as they approximate to the methods of the farm costing centers, are misdirected, in that they do not attack the variables which are relevant to peasant behavior, nor do they appear to be well-adapted to discovering what such variables are. Farm costing surveys assume that the agricultural activities of the cultivating peasants are governed by considerations of costs, prices, and profit margins, and that the business attitude is the appropriate rational attitude for the peasantry. They implicitly assume that activities which are not rational by business standards are irrational, and that the peasant cultivator would be better off if he changes his practices to conform with the rationale of business. There are, however, a number of circumstances which may often, if not generally, make an unbusinesslike attitude rational, or at least make a businesslike attitude unnecessary when considered in the light of other aims.

The first circumstance has been recognized quite widely: when a large portion of farm output is destined for consumption by the farmer's family, the relative and absolute prices of different crops are not very important considerations

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3. At the Gokhale Institute in Poona, Bombay; at Santiniketan, Bengal; at the University of Delhi; and at the University of Madras.

in deciding what to produce. Being his own supplier, the income effect implicit in higher prices is cancelled by the price effect on real income implicit in these same higher prices. In India, two factors make this circumstance much more important than it is in the West. Both the proportion of self-supplying subsistence farms and the proportion of produce retained on any farm are much higher, and the possibilities of marketing a larger quantity of one crop is apt to be so limited that production for sale combined with purchases for consumption does not seem to the cultivator to be a realistic alternative to domestic self-sufficiency.[4] Some households produce as much as 80 percent of all the goods they consume, and among the moderately well-to-do farm households studied by the Board of Economic Inquiry (Punjab), 60 percent is the typical figure.[5] Figures from a sample collected by the Indian Statistical Institute show an all-India average of 40 percent,[6] which may be low, but which in any case reflects conditions in the highly monetarized sugar, jute, and cotton tracts, and in the market gardening areas around the cities,[7] as well as conditions in the typical country area.

Less frequently appreciated is the state of affairs when "alternative costs" are not measured on the market. All costing implies that there is another use to which the resources or effort can be put. To evaluate costs in money terms requires that there be a market to price these costs. For any individual the value of leisure must always be implicit and to measure it requires a specific set of assumptions about a person's alternatives. In India, the problem of the implicit value of leisure is more difficult to handle because the leisure of permanent servants and employees is a matter of the master's choice. These servants are often bound to the cultivator or landlord by a debt too large to repay or by a traditional status of protector-dependent. How much the servant works or rests is not so much up to the servant as up to the employer. The difficulty with costing the labor arises because the servant is paid by the year--in maintenance, occasional bonuses of cash or clothing, and perhaps a share in the harvest--and customarily does many household and other non-agricultural chores. Consequently there is no direct, and only the most tenuous indirect, relationship between the cost of a servant and the amount of farm labor he contributes.

The problem of valuing labor input is complicated not only by the absence of alternative jobs. Neither the "master" or his "servant" can choose to work during the slack season or when they have "free" time resulting from the smallness of the agricultural holdings. The importance of this absence of alternative employment becomes clear when new forms of employment are opened. An expanded road building and maintenance program or other public works disrupt the traditional relationships, and employing peasants cease using "hired" labor because they must now pay a cash wage competitive with that paid by the Public Works Departments instead of enjoying the services of dependents who take what they are given in kind.

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4. See below.

5. Family Budgets, Board of Economic Inquiry (Punjab), Ludhiana, Punjab; 1945 through 1953 published, 1954 through 1956 still in manuscript.

6. From a private paper by Dr. Wilfred Malenbaum at the Center for International Studies, Massachusetts Institute of Technology.

7. See below.

Other inputs besides labor are not meaningfully priced on the market. One of major importance is the labor of bullocks. Occasionally a cultivator who is not using his bullocks or happens to have an extra pair[8] will rent them to another cultivator, but almost universally the working bullocks are owned by the cultivator who uses them. Bullocks can be costed at their cost of upkeep plus depreciation from the peak value at three years of age, but there are two objections to this imputation. First, much of the cost of upkeep involves imputing prices to the bhusa (straw from grain) and other home-produced feeds (which frequently include oil and oil cakes). Secondly, the Indian peasant does not conceive of managing his farm otherwise than with his own bullocks, so that the element of choice necessary to a concept of alternatives is not really present.[9]

Closely allied to the problem of measuring these costs is that of measuring the costs of capital inputs. Many of the irrigation and minor engineering works have been built and maintained over long periods of time. The construction and maintenance of these works is done to some extent by the family and by the family's servants. However, much of the work has been and is done by village servants and craftsmen and by the cooperative labor of a number of cultivators. To differentiate construction from maintenance would be impossible, but beyond this it is impossible to value the work of village servants and of cooperative effort. The servants are often supported by a traditional share in the harvest and do their work irrespective of the payment they get in any year. The origins of these works date back many years, sometimes even centuries. The same considerations apply to the reclamation of sections of fields. Salinity is common in dry areas, and the reclamation of saline patches consists of repetitive digging with a mattock, irrigation, and growing of fodder, all of which is done by unpriced labor of man and animal (for bullocks power many of the wells), and all of which is certainly a capital input.

A striking example occurs in the hills in the north of the Punjab in the Kangra Valley. The peasants' fields are terraced on the sides of the steep mountains down which the water races during the rains. Running alongside each natural streambed is an artificial channel in which the rate of flow can be controlled. Subsidiaries branch into the terraced fields. The main and subsidiary channels are constructed of large boulders and smaller stones. The flow of water during the rains is so great that the fields are quickly flooded despite the irrigation channels, so there is a gap in the outside wall of each terrace allowing the water to

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8. "Happens to have" is used here advisedly, as the breeding of bullocks does not appear to be a planned affair; and as the young bullocks grow up, a family may have more than they ordinarily do without having planned it that way and without having any definite plans about what they will do with the extras.

9. In one case where the records showed wide variations in the number of bullocks on a farm and in the intensity with which they were employed, the writer pursued the matter with the cultivator and discovered that one year the cultivator was ill and so did not work stony fields; in another a bullock was lame; in another an unusually large number of calves came of age. When asked why he did not even out his bullock costs and use by rental and sale, he replied that no one would rent and that he did not like to sell the animals he knew.

flow off to the next lower terrace, while other channels have been constructed to carry off some of the excess flow. Boulders embedded in the soil form paths between terraces. The lower halves of mountainsides have been terraced and channeled so that a solid slope of paddy is presented to the eye as far as one can see in either direction and going up one, two, and even three thousand feet. Archaeological excavations show similar developments in the early Indus Valley civilization, and in the Kangra valley the works date back well before the advent of colonial rule. They are presumed to have been constructed by the cooperative labor of the cultivating peasantry, and today are maintained by village servants whose sole and permanent job is keeping the channels clear and making minor repairs. When major repairs or new works are called for, the cultivators in the neighborhood combine to undertake the job. The monetary cost is a minute proportion of the total effort which went into building the system. One could put a value on the system by asking an engineering firm to estimate the cost of reproducing the job, but this hardly seems a relevant measure when it is inconceivable that any group of peasants would consider hiring an engineering firm to construct such a system, or even think of constructing such a system themselves except over a very long period of time. Without a market for the cooperative labor or the labor of the permanent servants, without a realistic alternative way of constructing wuch works, and without any alternative employment of time except leisure, one cannot cost the irrigation works.[10]

Were it merely a question of evaluating the historical costs of these works the problem would only arise in attempting to value depreciation in the current farm accounts. However, the same system is employed today in repairing and improving the existing works and in constructing new ones. It follows that measures of current investment expenditures are as liable to erroneous interpretation as are measures of the original cost.

In drawing up farm accounts, it has often proved possible to attribute values to inputs and outputs when the farmer has not bought or sold anything by using the prices of other transactions in the same village, but this is not easily justified. Let us suppose that a very small portion of the bhusa (straw) from a harvest is sold in the village. There is a price for the main feeding-stuff of the village, but can we price all the bhusa produced (and consumed by the livestock) at this price? Against the obvious argument that this is the price at which the produce was actually sold we must weigh the argument that in imputing values in America and Britain, for instance, we use the price at which most of a product was sold to impute the value of the little which was not sold. Even in the case of labor on American farms, where the implicit inputs exceed the purchased inputs, the flow between the markets for farm labor and for other labor, and the flow from city to farm and back, is so easy and frequent that there is no unreality in attributing the actual wages of one group to another. In India we have the opposite situation. The little that is sold is used to impute the value for the much larger amount which is not sold. As a matter of logic, a highly alert market can produce an equilibrium price with a single transaction, if that price is one at which all other potential sellers decide to withhold their supplies and all other potential buyers decide not to buy. It does not seem reasonable, however, to assume that this is the usual

10. Given the social system in which these works were built, it can be argued, in continuation of what is said in the text, that the true alternative cost of these works is zero.

case in India. The markets are neither perfect nor highly integrated. One man asks his neighbor for some bhusa when he needs it, and a bargain is struck. The other farmers in the community are not standing by to step in on one side of the market or the other. The price is probably not stable or representative because so little is sold. We have no idea what prices would prevail if one group sold all its bhusa and another bought all that came on the market, or if a sizeable number of cultivators in one village decided to sell more. No attempt is made here to answer the question one way or the other, but until it can be shown that the price at which a few farmers sell their bhusa in excess of current needs is the logical value to put on all bhusa in a village, there will be an air of unreality about imputed output values and imputed costs of maintaining livestock. More important, unless the cultivators themselves regard this price as the relevant value for their home-produced and home-consumed bhusa, a farm account using this price will not reflect the conditions which govern the cultivators' decisions.[11] What is said here about costing bhusa applies, if often to a lesser degree, to the pricing and costing of many other inputs and outputs. Perhaps three-fifths, and in some areas as much as four-fifths, of the agricultural produce in India never enters the market.

Beyond the difficulties of imputed accounting there looms the large problem of what we mean by rational behavior on the part of the peasantry. Rationality for a farm business in a thoroughly market-oriented economy may differ from rationality in the situation in which the Indian peasants find themselves. Where rational behavior for the Indian peasant differs from rational behavior for a farm manager, it is difficult to see how the results of farm management analysis can help either the peasants or the planners.

The rule of efficiency in a market is that the marginal cost of producing a little more of one crop is equal to the marginal revenue derived from that small increment; or, in other words, that the profit of the farm operations be at a maximum. This rule is a logical deduction from the proposition that the farmer tries to get the greatest possible income, and from the corollary that his behavior is efficient when there is no way he could employ the resources at his disposal to produce greater value.

From this general rule of a market economy is derived the conclusion that the less efficient farmers will be driven out of business because their profits are lower or negative. However, this result depends not upon the rule of efficiency but upon the rule of survival, that cash income from all sources must exceed cash outlays for all purposes. The rule of survival approximates the rule of efficiency when most "costs" are outlays in cash, and it is with an eye to this particular circumstance that the traditional methods of farm business analysis have been

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11. Since bhusa is an inevitable by-product of grain, the staple food of all India, and since bullocks are owned by the cultivator or his landlord, the cycle bhusa-bullock-work-grain-bhusa seems to be such an integral part of the system that one cannot conceive of an alternative in India. Why then attribute any cost to the bhusa? Yet in India farm accounts bhusa is an important element. The alternative procedure of pricing bhusa at the cost of alternative feeding stuffs (hay or meadow or maize or clover) would result in showing every farm account bankrupt, to which condition it would be extremely difficult to attach a meaning.

developed. Where costs (inputs) have a corresponding cash outlay, as in commerce or in a fully monetarized industrial economy or in one of the highly specialized agricultural economies like those of New Zealand or Denmark, no problem of what is meant by rational behavior arises, and for most purposes the rules of efficiency and of survival coincide.

When the gap between the rule of efficiency and the rule of survival is great, peasants' decisions and moves to survive and to fit their natural and social environment can be very different from moves to maximize net money income or income measured in material goods. The peasants' actions may be rational and intelligent even if "uneconomic", and proof that the peasant is doing something "uneconomic" does not show that he is either ignorant or foolish. Many considerations other than economic efficiency impinge upon the management of Indian farms from a desire to keep relatives together through activities which create prestige but not income, to the observance of the rules of accepted behavior and of religion. If the economic system provides the leeway--between the money income needed to survive and maximum profitability--it is not irrational to give higher priority to non-economic activities and ends. There is a parallel of sorts here with the businessman who can "administer" his prices or with those modes of social behavior which so delighted Veblen. The argument is not that the Indian is peculiar in this respect, but this his opportunities are greater, the non-economic pressures stronger, and the market pressures weaker. The Indian adaptation to circumstances is therefore different, but it is not therefore less intelligent.

It is argued here that the Indian peasant is rational, yet it is often pointed out that he could increase his crop yields by altering his farming practices. The use of dung for cooking instead of for fertilizing fields is often cited. The case illustrates the difficulties in the way of analysis. First, there is a shortage of fuel in many areas. Since wood and charcoal are not available and merchants do not bring it in, the peasants could not make their chappatis from the higher wheat yield if the higher yield required dung. Second, dung is widely used as manure when there is enough water available to prevent burning of the plants, but it is not so used in dry areas where it would do more harm than good. Third, the home manufacture of ghee (clarified or boiled butter) and lesi (whey) requires a warm, slow fire, and dung is much more effective here than charcoal or wood. It is not so clear that the peasant should want to put his dung on the field.[12]

The size of the gap in India between efficiency and what one must earn to survive is hard to discover, since we should measure the marginal cost of output (which at maximum efficiency equals the price of the output) against the marginal cash-outlay cost. The information needed to compute these marginal costs does not exist, but some indication of the magnitude may be had from average cost figures. At the Punjab Board of Economic Inquiry the figures gathered in the farm cost project showed average cash outlays per maund (82 lbs.) of wheat produced of Rs. 3, Rs. 4, and Rs. 5, while the total average costs, including implicit costs, ran up to Rs. 15. Market prices ranged from Rs. 12. These figures indicate that a peasant need earn only a third of what he might earn, and nevertheless retain

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12. Although it may still be correct that the peasant and the rest of Indian society would be better off if the economy were so reorganized as to make another slow-burning fuels available in exchange for a higher yield of wheat based on dung and new methods of water utilization.

his farm. Where the gap is this large, or even half as large, there is much room for maneuver--for the peasant to consider many other aims and values and fears besides the immediate commercial ones of farm business.

In terms of equilibrium theory, rural India presents a wide range rather than a point. Any price between the maximum efficiency point and the minimum survival point is possible. Not only is the solution indeterminate, but it is possible to have several different prices at the same time with no mechanism operating to assure gradual coalescence of the prices.

In the discussion here and on the following pages, it is not intended to imply that there are no market-oriented reactions among the Indian peasantry, or that they pay no attention to prices. They do when the prices are meaningful or when the opportunities are clear. There are areas where adjustment to the money economy is great. The larger part of the incomes of jute growers in Bengal is in cash from the mills and the exporters. The same is true of the cotton growers of Gujarat. Near the larger cities there has been a complete adjustment to the urban market. Around the city of Ludhiana in the Punjab, a city of over 150,000 people, one observes belts of vegetable gardening, dairying, and fodder growing for the milch buffaloes in the city. On a tour south of Poona in Bombay State, the writer discovered that the potato and onion "shed" for Bombay city extended over 150 miles from Bombay. Poona, with over half a million people, is surrounded by villages specializing in milk, or in carrots and potatoes. These are all commercial farmers and will shift from one crop to another and depend upon outside sources for their consumption goods. One finds farmers in an area extending up to fifty miles who grow wheat to sell in Poona market where they buy the cheaper jowar grain and pocket the difference in cash. As sugar mills have spread over the country, there has been a marked shift toward commercial farming when new mills start operations. As industrial towns grow, particularly in the north where there are a large number of refugees from Pakistan, the result is the same.

Where there is a jute or sugar mill, the peasant economy has become more monetarized, but more market-oriented in only a limited sense. The farmer can grow and sell one commercial crop, but in the absence of competing commercial crops one cannot say that he adjusts to market prices. The success of sugar mills in getting and keeping a full supply of cane, in fact, of having to develop a system of rationing allotments among their suppliers, indicates that within any range of relative prices seen over the past three decades the advantages of turning a sugar cane crop into cash on an assured basis far outweighs any other consideration.[13] The only relative prices which have an influence here are the prices paid for cane by the mills and the price of gur--a home-made, unrefined sugar. If the price of gur rises relative to the mill price of cane, cultivators will withhold cane from the mill and boil their own gur.

We may expect the area and effectiveness of market considerations to increase as year-round bridges and roads are built connecting the cultivator with the cities and the processing mills. A map of the large area influenced by the Bombay market would show fingers pointing out along the good roads, with areas of little influence close to Bombay where transportation facilities were poor. After a century and a half of British rule, it is not surprising to find a widening area of

13. See below.

monetarized and market-oriented farming, but in much of India today the opportunities for commercial farming are small and market pressures are weak.

There are many considerations which will discourage the management of holdings on the basis of relative prices and costs and on the assumption that maximization of welfare as seen by the peasant can be equated with a maximization of accounting income. One is the desire to conform, and sometimes the necessity of conforming, to a customary pattern. It is difficult to see how any peasant in Kangra could alter his cropping pattern or farming methods independently of all the others who share the mountainside. Outside of the commercial farming districts and areas close to the cities, it still appears that what the village elders consider to be the right and proper thing to do carried great weight.[14] Custom--the wisdom of the ages--has an important position in all other Indian activities and must often exert heavy pressures in agriculture in directions other than those indicated by costs and prices. This writer has not seen a study of the effect of religion and the priesthood (probably through astrology) upon farming decisions, but here again it seems likely, in view of the effect of these upon other important activities and decisions, that they would play a prominent part in counteracting or eliminating market-oriented decisions. It is true that these non-economic pressures may easily lead to economically inefficient use of resources and that the material means of satisfying wants would increase were these pressures less powerful, but it does not follow that the peasantry thinks that giving a higher priority to economic considerations will make for a better life. To say that the peasant farmer is making a mistake economically does not answer the questions of how and why he manages his farm as he does.

Another element affecting the making of decisions is the desire to stay away from the money-lender. Since the money-lender often has the reputation of being a usurer and a generally dangerous man, a cultivator may feel it is wise not to borrow even in those cases where he sees an opportunity for the profitable employment of borrowed funds. Sometimes the tenant holding land as a share-cropper may think it wiser not to attract the attention of the landlord; sometimes certain crops or procedures will make it easier for the share-cropping tenant to secret some part of the produce and thus turn over less to the landlord.

There is an obverse to this coin. If the money-lender has trading interests and this is very often the case, he will find it to his advantage to require the cultivator to grow what will fit into his other business interests rather than what will bring the largest return to both. Since a money-lender who can make sure that all the debtor's transactions take place with and through himself can falsify the books and alter prices and charges in his own favor, he has an added motive to insist upon what may be less than optimum cropping patterns. Finally, the money-lender may consider it to be in his long-run interest to keep the cultivator indebted since this will guarantee a permanent income to the money-lender or an easy route

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14. For illustrations of this problem in Community Project areas, see Adrian C. Mayer, "Development Projects in an Indian Village", Pacific Affairs, Vol. XXIX, No. 3, March 1956; and for similar problems in the field of medicine see McKim Marriott, "Western Medicine in a Village of Northern India", Health, Culture and Community: Case Studies of Reactions to Health Programs, Benjamin D. Paul and Walter B. Miller, eds., New York, 1955, pp. 239-268.

to landlord status. The same may apply to the landlord, whether he wants to assure himself of his share of the crop or to ensure that the tenant has the cash to pay the rent. Perishable crops--vegetables, milk, and ghee--may provide a high return to the cultivator, but since he markets them from day to day he is in a position to avoid extra exactions by the money-lender or landlord, who may therefore prefer secure control to prompt payment.. The terms of loans and leases can be so drawn as to give the creditor the necessary power.

Another circumstance discouraging market-oriented reactions was found by Mrs. Scarlett Trent in two Mysore villages.[15] Extension workers find it impossible to get the cultivators to adopt labor-saving devices and methods. Much of the field labor is done by members of families traditionally attached to the cultivating families. If these laboring families did the field work they were paid, but if there was no work to be done, the cultivating families felt obliged to support the laboring families anyway. In consequence there were no costs to be saved by saving labor. It would be as correct to put the costs of maintaining these laboring families under the heads of "conspicuous consumption" or "consumption expenditure for the purpose of maintaining social status" as under the head of "labor input".

That this situation must be common throughout India is indicated by the prevalence of permanent servants, dependents, and poor relatives.

The peasant needs to eat. Before a man will become dependent upon a source of supply for his most vital needs he must be assured that this supply will come through to him when he needs it. Occasional markets will not serve his purpose: they must be regular and frequent, and large enough to absorb the produce which the cultivator brings to market. Around the cities of India belts of market gardening and dairying have developed along commercial lines, and this is because the cultivator knows that any day on which he brings in a couple of bags of carrots or onions, or a wagon load of potatoes, he will be able to sell them. However, in the country districts he cannot be sure that very small local markets or the village shopkeeper will want his produce, and since he is close to the level of starvation, he cannot afford to take the risk of being unable to buy staple foodstuffs if his marketable foodstuffs or raw materials do not find a market.

It is of course not merely a matter of the physical presence or absence of large markets, but also of being able to get to them. Mountain ridges or rivers in flood can cut off a village from a source of commercial supply, and so long as there are difficulties or dangers, the rational peasant will not risk his staple supply for the next year even if commercial considerations point to a different pattern of farming.

Natural conditions reinforce this conservatism. In many areas plowing and hence planting depend on the timing of the monsoon, while the crop chosen depends on the time of planting. In the Deccan wheat is planted when the monsoon comes early, jowar or bajri (millets) when the monsoon is late. The relative prices of seed wheat and seed jowar and the anticipated harvest prices of these two can have little effect upon the choice made. Where the soil is shallow and the

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15. Mrs. Trent, of the University of Manchester, England, told me about this case. She is now writing up the results of her two-year survey of the economy of these villages.

climate dry, the only staple food crop whose growth is assured is bajri. A bare level of survival-subsistence can combine with natural conditions to produce a farming pattern without alternatives and hence without alternative costs, with the result that farm business accounts can do nothing to explain or to alter the agriculture of these cultivators.

Perhaps the most important element in the peasant's scheme of values is the maintenance of the unity of his family and the interdependence of the kinship over as wide an area as possible. Thus, when the peasant is faced with the choice of a profitable action and another action which will tend to keep more of his family on the farm, to supply security (and a dependent status) to his relatives, and to increase the dignity and prestige of his position in the family, he will forego the profitable move. An instance would be the intensive cultivation of rice when jowar (a millet) would be more profitable but would employ less labor and feed fewer people per acre. Again, it is to be emphasized that it is the ability to survive as a farmer while not maximizing income or minimizing costs that permits the cultivator to give so much importance to these other matters.

There is, of course, a descriptive value in farm accounts. Insofar as they are kept in quantities in kind, we get a picture of what the farmer uses and what he produces. If these accounts are complete, at least as regards particular crops they can be used by an agronomist in an analysis of what methods the farmer could better employ. At the descriptive level and at the technological level farm accounts are useful, but it is at the level of economic analysis--in accounting for the peasant's behavior and in formulating policies which will induce him to change his pattern of behavior--that farm accounts based on western concepts of economic accounting can be misleading. A study of farm management in India requires far more emphasis upon the discovery of the variables within the village structure which govern peasant farm management decision and much less upon efforts to force peasant farming operations into the pattern of western analytical classifications. Farm costing can become fully relevant only as a subordinate aspect of a study of the techniques and motivations of present peasant management.

The criticism of the employment of India's agricultural economists in the pursuit of farm business analysis rests on the danger that conclusions derived from such research may be in error in regard either to evaluations of welfare or to the formulation of policy.

For instance, figures of net income may be misleading when peasants do not actually incur some costs or in effect enjoy a higher price for their product than that imputed from the market. If most costs are implicit, no matter how high they are they do not reduce the available product. As a result, costing of land owned by the cultivator, of the labor of his family and his permanent servants, of seeds supplied from his last harvest, of manure from his livestock, of the bhusa fed to his livestock, of cotton sticks used for fuel, all tend to misrepresent the farmer's income and welfare position. When a farmer stores his own grain and his wife pounds or grinds it, the farmer and his family in effect produce and consume flour which should therefore be priced at current retail prices. The common accounting practice of pricing grain output at the harvest price of grain thus understates the farm's income by as much as fifty percent.

The real test of income welfare is not the harvest value (with all the difficulties of imputing this value) less costs (which involve even greater difficulties

of imputation), but rather the food and other produce available to the family plus any net additions to the productivity of the farm resulting from the employment of "free" time to spade, to plow, or to irrigate.

To illustrate, of three sets of farm records intensively studied by the author, it was found that in each case an appreciably larger income (10 to 25 percent) could be attributed to each farmer by altering the assumptions on which costs and values were imputed. That there was merit in making such alterations became apparent when it developed that although the farm records showed these farmers operating on the margin of deficit, some years at a loss, some at a small profit, nevertheless in two cases the farmers were lending money from their earnings and in one case had been increasing the farm size by buying from neighbors. Certainly this could only be possible when the farms were in the most relevant sense operating with an "investible surplus". If the records do not show this surplus, it is reasonable to assume that there is something wrong with the records. What appears to be more important than the possibility of poor record-keeping is the possibility that the kind of records which the cultivator is asked to keep do not truly reflect his mode of operations and so lead inevitably to a misstatement of his position.

Among the policy decisions which may be made on the basis of farm business analysis are those:

1. to give farmers a minimum guaranteed price on their output.

2. to use price (and subsidy) policy to stimulate production.

3. to stabilize prices.

4. to decide on the capacity of farmers to borrow and on their ability to save and invest.

5. to evaluate changes in national income, savings, growth of agricultural income, and to make changes in the development plans on the basis of such evaluations.[16]

In every one of these cases a reading of the record on the basis of western farm management research methods can lead to unnecessarily costly or to unanticipated results.

The minimum price needed to maintain production and the flow of goods into the urban markets may be far below the price indicated by the costing analysis. This will be true whenever the effective price to the farmer exceeds the price needed to assure survival. So long as the farmer's cash receipts on the output he sells exceeds his total cash outlays, he may be willing to bring some of his output to market. In fact, a lower price may force a larger amount on the market in order to pay land taxes, local taxes, and water rates. Only when the price falls below this level will the farmer be in trouble. While we do not know what his minimum price is, we do know that it is not--except by pure chance--either the average cash outlay cost of a crop or the average cash outlay plus

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16. All these decisions are at present being actively debated in India.

implicit cost of the crop. It must be higher than the former, or the farmer would have to sell his entire output to pay his cash costs,[17] and is probably lower than the latter. At any rate, despite price declines during the First Five Year Plan (1951-56), the urban food shortage disappeared, and agricultural production was reported to be increasing.

Another piece of evidence indicating that prices and accounts will not explain peasant activities is the history of sugar prices and output. Since the 1920's the amount of cane coming to the sugar mills has increased steadily despite a decline in the price of cane relative to other crops. The answer seems to be that an assured market (the new sugar mills) will bring forth a supply at lower prices. It is not the level of the price; it is the assurance that a price can be realized fifteen to twenty months after the crop is planned. Price fulfills the function of rationing an existing supply coming on the market and adjusts purchased consumption to abnormal supplies in very good or bad years, but price does not have an adjusting effect upon future supplies.

The writer attempted a number of correlations between acreage planted to the major crops and prices. It seemed reasonable to assume that expected prices bear a positive relationship to current and recent prices, so correlations were made between acreages and price relatives without lags, with one, with two, and with three-year lags to allow for the varying length of crop periods, and between acreages and the price relatives averaged over the preceding three years, for the Punjab in the years 1939-53. The only significant correlations were for barley and maize, which are regarded as the least commercial of crops. Graphs of indices of prices and acreages for Uttar Pradesh during the period 1919-1939 showed criss-crossing lines indicating no correlation.[18]

We may therefore conclude that a program of price supports is unnecessary to keep the farmers producing and to keep them from bankruptcy, high imputed costs notwithstanding.

The supply (schedule) of agricultural produce seems to depend very much on what the peasant finds himself with after deducting the needs of his family from his harvest. If this excess or surplus is large, it will go to the market, whatever the price, and if it is small it will not increase even with higher prices, because he will first take care of his own family's immediate consumption requirements. When interviewing cultivators, the writer asked why the particular crops grown were chosen, and the usual answer was that his family needed them. Answers to questions about what was sold and why generally involved remarks to the effect that the crop yield was more than the family needed. If the size of the farm permitted it, the cultivator would devote a larger acreage to each crop than he anticipated was necessary. If luck was poor, this provided a cushion. If luck was good it provided extra cash. The cultivators did not say that they planted a particular crop because the price was relatively high or because they expected it to be high next year. Furthermore, there was apparently little effort to vary stocks in order

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17. After paying these costs, he presumably starves to death.

18. In a note Dr. Raeburn of L.S.E. informs me that students of his have found significant correlations for grains, cotton, and oilseeds. From my own computations, I still regard the question as at least undecided.

to even out year-to-year fluctuations in yield. The considerations were first, to supply the family's needs this year, and second, to take what cash could be acquired for the surplus. This being the case, a price policy designed to increase the production of a certain crop or, more especially, to increase the flow of that crop into the market, may fail. The rational reaction of the peasant may not be the expected rational market reaction. No price will induce a larger supply if the peasant is not sure that he can use the proceeds of a sale when his village is cut off from the market town during a monsoon. A change in relative prices would have to be very great to induce a well-to-do peasant to let his "retainers" go. The rational reaction of the peasant is likely to be the maintenance of his self-sufficiency. In the usual terminology of economic analysis, the price of agricultural produce in India has a rationing effect, and a distribution effect on cash incomes, but there is a good deal of evidence pointing to the conclusion that it has much less effect on what is produced.

Stability of prices of the staple food crops would be a great virtue for those who live in towns, but from the farmer's point of view, it is not nearly so important. The higher the price, the larger the peasant's cash income, but this is a virtue of high, not of stable, prices. His need is for an assurance that his cash income will cover his cash outlays, but these are only a small portion of his real income and expenses. The idea that the peasant needs price stability comes most likely from the farm accounts which show fluctuating harvest prices and steadily mounting implicit costs over the past decade. Remove these implicit costs from the accounts, and it becomes more difficult to see why the cultivator needs a stable price.

A most interesting case of the possible misinterpretation of the significance of the management of a farm arising from an analysis of farm cost records can occur when rating the riskiness of loans to farmers. The true risk involved in a loan depends on the farmer's willingness and ability to repay the loan, but a poor accounts position can be associated with a high ability to repay while a good accounts position can be associated with a low ability to repay. A poor accounts position will occur when the income of the farm including imputed values is less than the cost of farm operations including imputed costs, yet, at the same time, the cash income of his farm can exceed the cash expenses of the farm by a large margin, and in this case the farmer is an excellent loan risk. In the other case, if the cash income of a farmer is roughly equal to his cash costs, even though his imputed income is much larger than his imputed costs, a real problem arises as to how this farmer is going to repay his loan. If the proceeds of the loan are used to increase the farmer's cash income, the problem is solved, but if the proceeds are used in a highly productive way--which does not increase cash receipts--the farmer is clearly a much worse risk than his less efficient competitor. This can occur, for instance, when the farmer invests time and energy in improving his holding and its future productivity, but lives in an area where transfers of land to money-lenders is prohibited (e.g., all land held by sirdars--tenants of the State--in Uttar Pradesh), so that the creditor cannot tap the increase in land value.

On the level of national income accounts, the normal farm business analysis can be equally misleading. The figure reflecting the true or welfare income of the peasant need not, and most often will not, equal the income computed from farm records; the savings potential of the peasantry may exceed or fall short of the surplus shown on farm and domestic accounts, as when the capacity for non-monetary investment in the form of the investment of one's own or one's servant's

time is large, or conversely, when cash outlays rise relative to cash receipts. It seems likely that the real incomes of farmers in India have fluctuated much less in the last few years than data on costs and prices indicate. It also seems that the amount of non-monetary investment has been greater than is commonly realized because much of this sort of work-investment is hidden in the everyday activity of the farm family and its servants.

The conclusion in regard to farm management research is that data of the farm costing type will not be so useful as has been anticipated in India, for it neither reflects many of the problems most relevant to peasant decisions nor the changes in conditions which the planners need to know about in order to fit the program for agricultural development into the context of Indian peasant farming.

What would be a better employment of resources for research into Indian farm management? For broad estimates of national output of various crops and for trends in the cash costs of farm operations, individual farm records are not necessary, and in fact, other methods would be more accurate. For national magnitudes the recently adopted system of crop-cutting is undoubtedly better, and further effort should be devoted to an extension of these experiments by type of crop and division into sub-samples for smaller areas. Stratified random samples of the prices of fertilizers, iron, pumps, engines, diesel oil, land revenues and water rates, cash rents, local taxes, and the prices of bullocks and buffaloes would provide knowledge of the trends in the cost of cash inputs much more cheaply than similar information derived from detailed farm accounts.

At the present time a fuller understanding of Indian agriculture depends less on the commercial accounts of farmers than it does upon developing a picture of the Indian farmer. We have seen that the usual procedures of data collection and analysis can be misleading. Instead of pursuing this difficult and not fully relevant path, it would be better to devote the funds and personnel available for research in agricultural economics to the factors most relevant to peasant decisions: the importance of self-sufficiency, of family unity, of personal prestige, of family secrecy, of farmer-employee relations, of inter-caste relationships, of the availability and characteristics of the markets in which the peasant buys and sells, of the peasant's attitudes to these markets and to his landlord or to the local money-lender, of village customs and social relationships. It would be surprising if the results of this kind of research did not vary widely between areas in India.

Before the prices in local markets, in town markets, and in country shops can be used for imputing values and costs, it is necessary to have detailed observational reports on the workings of these markets. We know very little about how bargains are struck, the means and terms of payment and delivery, and how these terms are interpreted, the frequency of attendance at the markets by cultivators, the reasons for their attendance and the circumstances in which they attend, the systems of grading and valuing and the systems of finance and credit in each market. Here again, we should expect significant variations between different types of markets and between markets in different regions.

The normal form of farm accounts assumes a particular background--that of a commercial agriculture operating in a monetarized economy--and these accounts will be misleading in another setting. Because the settings of the Indian and western farm economies differ, because the circumstances of the Indian and the western farmer differ, and because their immediate aims differ, we must have this background first. When we have found out why the Indian farmers do or do not invest in fixed capital, various kinds of equipment, livestock, fertilizers, and crop rotations, and under what conditions they would invest more and market more, then only can we supply knowledge of farm business accounts to elucidate questions of welfare and policy.

The limitations and shortcomings of the farm costing projects which have been outlined in this paper are not the results of setting up poor projects--on the contrary, the projects are fully thought out and well organized--but of entering upon a form of research which is inappropriate to the conditions under which the Indian peasant operations and which can only be brought to useful fruition after research has produced classifications appropriate to the peasant economy.

AGRARIAN REFORM IN INDIA: THE DEBATE ON CEILINGS

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The redistribution of land has been a major item of the recent land reform programs in India, as in many countries of Southeastern Europe and Latin America and in China and Japan, where the increasing pressure of population on land has led, in the absence of a sufficiently rapid growth of non-agricultural employment, to a progressive diminution of the size of holdings and accentuated the inequality in the distribution of land. The ruling party in India--the Indian National Congress--has been committed to radical land reforms for at least 25 years and to the imposition of ceilings for at least 10 years. The 55th Session of the Congress held at Jaipur in December 1948 (a year after Independence) adopted an Economic Program which included the imposition of ceilings. The Congress Agrarian Reforms Committee again recommended the absolute limitation of landholding in 1949. And both the First and the Second Five Year Plans of the Congress Government explicitly recommended the fixation of ceilings. More recently, the 63rd Session of the Congress held in January 1958 urged "that there should be a maximum limit on the size of the holding under personal cultivation." The three major opposition parties, the Praja Socialist Party, the Communist Party of India, and even the Jana Sangh (usually regarded by the intelligentsia as conservative) also promised the fixation of ceilings and redistribution of land in their manifestoes for the general election of 1957. The neo-Gandhian Bhoodan movement has been concerned almost exclusively with the collection of gifts of land from landholders and its free distribution among the landless.

The Basic Facts

This almost universal demand for the redistribution of land is a very natural outcome of the iniquity of its present distribution. According to the National Sample Survey, there are about 66 million households residing in the rural areas of India, owning about 310 million acres of land; 15 million or about 22% of them do not own any land; another 25% own less than one acre each.[1] The overall distribution of landholdings is presented in Table 1.

It is only to be expected that when a quarter of rural households own no land, another quarter have less than one acre each, and only 1% of them have more than 40 acres each and 20% of the total area, the landless and the smallest holders should want to get a share of the land held by the larger landholders. The landless want land, not only as a means of subsistence and a security to borrow with, but also as the essential token of status in rural society. The smallest

1. Government of India, National Sample Survey, First Report on Land Holdings, Rural Sector, Delhi, 1958, p. 13.

Table 1. Distribution of Landholdings in India, 1954-58

Size group	Ownership Holdings*		Operational Holdings+	
	% of rural households	% of total area	% of rural households	% of total area
0.00 or less than 0.005 acres	22.00	-	6.34	-
Less than 1.00 acre	46.89	1.38	40.23	1.25
Less than 2.50	60.76	6.31	54.80	5.93
Less than 5.00	74.42	16.77	70.71	16.79
Less than 10.00	87.29	35.99	85.58	36.42
Less than 20.00	95.07	58.94	94.42	59.71
Less than 30.00	97.57	71.95	97.28	72.81
Less than 50.00	99.14	84.40	99.09	85.57
Above 50.00	100.00	100.00	100.00	100.00

* An ownership holding was defined as the area of land held in India in permanent heritable possession (occupancy right) with or without the right to transfer such title.

\+ An operation holding was defined as all parcels of land, located anywhere, under a distinct unit of technical and economic management for cultivation or other purposes. It included land owned and self-operated and land leased in.

Source: National Sample Survey, First Report on Land Holdings, Rural Sector, Delhi, 1958, p. 14.

holders want more land in order to have minimum economic holdings. The Rural Credit Survey (1954) revealed that the hunger for land among the smallest holders is so acute that 40% of the credit requirements of the lower half of the cultivating families covered by the Survey were stated to be for the purchase of land.

The Progress of Legislation[2]

Legislative action to apply ceilings has been taken only in a few states so far. A ceiling has been imposed on the future acquisition of land in Bombay at 3 economic holdings or 12 to 48 acres of different types of land; in Madhya Pradesh at 50 acres; and in Uttar Pradesh and Delhi at 30 acres. Ceilings have been fixed on existing holdings in the Telangana area of Andhra at 4.5 family holdings or 18 to 270 acres of different types of land; in Assam at 50 acres; in Kashmir at 22.75 acres; in the Pepsu area of Punjab at 30 standard acres for non-refugee farmers and 40 standard acres for refugee farmers; in West Bengal at 25 acres; and in Himachal Pradesh at 30 acres in District Chamba and at the area of land assessed for Rs. 125/- in other districts. Proposals to impose ceilings are under consideration in other states. The Andhra government has published a bill fixing a ceiling on the area held on the basis of a net income of Rs. 5,400/- per annum. In

2. This section summarizes the position as of September 1958.

Bihar a Commission has been appointed to make recommendations. The Kerala legislature has referred a bill proposing a ceiling to a Select Committee. In Madras the proposal to impose a ceiling is under consideration. In Mysore the report of a committee appointed by the government is under consideration. The committee has recommended the fixation of a ceiling at 4.5 family holdings, a family holding being defined as yielding a net income of Rs. 1,200 per year. In Orissa a committee was appointed to make recommendations but failed to recommend any ceilings. In the Punjab, though no ceiling has been fixed so far (except in Pepsu), the government is empowered to take over the management of lands held by landowners in excess of 30 standard acres (or 50 standard acres in the case of refugees) for the resettlement of displaced tenants. In Rajasthan the report of a committee appointed by the government to make recommendations regarding ceilings is under consideration. The committee has recommended a ceiling at an area of land yielding an income of Rs. 2,400/- per annum. This would be about 40 acres of irrigated land and 250 acres of dry land. In the centrally administered area of Manipur a bill is being drafted to impose ceilings.

On the whole, the progress of ceilings legislation has been slow in comparison with other land reform legislation. And even in the states where legislation has been enacted, administrative action has either not been taken at all or taken only in a few districts.

Exasperated by this delay, the Planning Commission and the Central Government have been putting the maximum pressure on the state governments to expedite the enactment and enforcement of ceilings. The Standing Committee of the National Development Council, at its meeting of 15 September 1957, urged that all states should enact a ceiling law by March 1959, and implement it within 3 years. Most recently, at the 64th Session of the Indian National Congress held in January 1959, a comprehensive resolution on agrarian policy was passed, calling upon all state governments to pass ceilings legislation before the end of this year. Redistribution of land has thus become the immediate agenda of the state governments. But in trying to obey the Center, the state governments are faced with real political and administrative difficulties which cannot be resolved merely by Central pressure. As these governments come to grips with these difficulties, the lacunae of the Central policy come to light, and the debate on ceilings becomes more acrimonious, as well as more realistic.

Ceilings in the Five Year Plans

The Central Government and the Planning Commission have never been very clear about the main purpose of the imposition of ceilings, nor sure of the practicability of their own proposals. In both the First and the Second Five Year Plans, one fails to find a clear statement of what the ceilings are expected to achieve and how. The First Plan stated that

> if it were the sole object of policy to reduce the holdings of the larger owners with a view to providing for the landless or for increasing the farms of those who now have uneconomic fragments, the facts at present available suggest that these aims are not likely to be achieved in any substantial measure. The question whether some limit should not be placed on the amount of land that an individual may hold has, therefore, to be answered in terms of general principles rather than in relation to the

> possible use that could be made of land in excess of any limit that may be set... [In] relation to land (as also in other sectors of the economy) individual property in excess of any norm that may be proposed has to be justified in terms of public interest and not merely on grounds of individual rights and claims. We are, therefore, in favour of the principle that there should be an upper limit to the amount of land that an individual may hold.[3]

It would be difficult to think of a statement more confused than this. All the landless and uneconomic farmers cannot be given land; the imposition of ceilings has therefore to be justified "in terms of general principles" and "in terms of public interest". But the "general principles" and the "public interest" are nowhere explained; the "possible use" that could be made of surplus land is not clear; and yet it is recommended that "there should be an upper limit to the amount of land that an individual may hold."

In the Second Five Year Plan, it is stated that ceilings are needed "for developing a cooperative rural economy" and for enabling the landless to acquire a better social status. Like the First Five Year Plan, the Second recognizes that

> redistribution of land in excess of a ceiling may yield relatively limited results... Only a small proportion of agricultural workers can be settled on land.[4]

But it goes on to recommend that

> for reasons of social policy no less than those of economic development... some positive relief within the rural economy [should be] given to [them]...[5]

Even though only a small proportion of farm workers can be settled on land, displaced tenants, farmers with uneconomic holdings, and landless workers are all to "receive preference" in the settlement of surplus land. The ceiling may be fixed "at about three family holdings". But a "family holding" is not clearly defined. It may either be "an operational unit"--e.g., a plow unit or work unit for a family of average size, or it may be an area of land which can yield a certain average income though "it is difficult to correlate a family holding to a given level of money income adjusted to a supposed level of prices." Every state may specify, according to local conditions, "the area of land which may be declared a family holding." A small group of experts would also study the subject further.[6] Every state may also determine whether the ceiling should apply to individual holdings or to holdings of families, and the allowance to be made for the size of the family in case the ceiling is applied to family holdings. Certain types of farms, such as tea, coffee,

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3. Government of India, Planning Commission, First Five Year Plan, Delhi, 1951, p. 188.

4. Government of India, Planning Commission, Second Five Year Plan, Delhi, 1956, p. 178.

5. Ibid., p. 198.

6. An expert committee was set up later to define a family holding, but it has not reported yet.

and rubber plantations, compact orchards, cattle-breeding, dairy and wool-raising farms, compact and efficiently cultivated large farms on which heavy investments or permanent structural improvements have been made, sugar cane farms operated by sugar factories, etc., may be exempted from the application of ceilings, as also newly settled culturable wastelands.

These proposals of the Second Plan seem to be somewhat more concrete than those of the First, but no attempt has been made in the Second Plan to estimate even roughly, on the basis of the proposed ceilings and exemptions, how much surplus land is likely to be available in different states and how it should be distributed amongst all the classes which, according to the Plan, are eligible to have a share in it.

The basic contradiction of the Second Plan proposals lies in the fact that if all the claimants of surplus land, namely, evicted tenants, uneconomic farmers, attached laborers, and casual landless workers, are to be accommodated, the ceilings would have to be very low--very much lower than those suggested. If the ceilings are kept high, and if, as proposed, certain categories of farms are exempted from their application, all the claimants cannot be given even a minimum of 2 acres. Discrimination between different classes of claimants or exclusion of some of them would create grave discontent. It would be extremely difficult for any political party to go back on the promise--when all other parties are promising it--to give land to all landless workers and uneconomic farmers. Nor can it give land to some of them and not to others in the same category.

The Arithmetic of Land Distribution

The report of the National Sample Survey cited above shows the broad limits of what is arithmetically possible. The report says:

> If it is decided that... every rural households must have at least 2.0 acres, a simple calculation will show that the total area of land required for those who do not own any land or have less than 2.0 acres would be about 60 million acres. If the ceiling is fixed at 20 acres, and all households holding more than 20 acres are required to hand over the area held by them in excess of 20 acres, then the amount of land which becomes available for distribution in this way would be about 63 million acres. Using all-India figures (with an overall average size of holding of 4.7 acres) it is thus seen as a first approximation, that a floor of 2.0 acres would be consistent with a ceiling of 20 acres.
>
> It is likely, of course, that in a scheme of land redistribution the decision would be to give land only to those whose main occupation is agriculture. In this case the non-agricultural households would have to be taken out of the calculation; and this would result in the possibility of the ceiling or the floor being raised to some extent.
>
> But the distribution of land, its quality and the average size of owners' holdings differ from zone to zone and it would not be realistic to think in terms of uniform ceilings and floor on land holdings in different zones... But the zonal or the all-India figures can supply a rough idea of the possibilities and limitations of land distribution in India under given assumptions.

7. National Sample Survey, op. cit., pp. v-vi.

Zonal data in the same report shows that in South India a floor of 2.0 acres would require a ceiling of 9 acres; in East India a floor of even 1.5 acres would require a ceiling of only 7.5 acres; while in Central India a ceiling of even 30 acres would permit a floor of 2.5 acres.

Arithmetically, therefore, it would be possible to give a minimum of 2 acres to all rural households engaged in agriculture only if the ceilings are low enough--between 7 and 20 acres.[8]

Some sections of opinion have, of course, been asking for low ceilings. The communist-dominated Kisan Sabha has been demanding a ceiling of 20 acres, or twice the family holding. Others have been demanding a ceiling at an even lower level--the area that can be cultivated by a family with a plow-unit. This may be about 7.5 acres in states like Andhra and Madras, and 15 acres in states like Punjab, Bombay, and Madhya Pradesh. The Bhoodan movement has been advocating and attempting the redistribution of land in gramdan villages on the basis that the cultivable land of every village should be equally distributed amongst the cultivating persons--though in practice it has succeeded only in reducing the ratio between the maximum and the minimum area of land held by holders to 4:1 or 5:1, or in rare cases to 3:1.

If the chief motive of redistributing land is simply the arithmetic ideal that every agricultural family must have a minimum subsistence holding, there is no escape from the proposal that the ceiling be fixed on all land at what a farmer family can cultivate with a plow unit, and in any event at less than 20 acres, and in some regions at less than ten. By contrast, the proposals of the Planning Commission and the current plans of the State Governments mentioned above would not achieve this purpose.

Ceilings are being currently fixed at around 30 acres, with many kinds of lands exempted from ceilings, and in many states a family holding is defined in such a way as to fix the ceilings at a much higher acreage. In some states the ceiling area is being determined by reference to a minimum income: Rajasthan--Rs. 2,400/-; Hyderabad--Rs. 3,600/-; Pepsu--Rs. 4,500/-; Andhra and Mysore--Rs. 5,400/-.

If a certain income, which may differ from state to state, is the basis for the determination of ceilings, the ceilings in terms of acres would vary widely in different regions according to their respective crop-patterns and irrigation facilities and the assumptions made about agricultural prices.[9] The overall shortage

8. Mere arithmetic, of course, overstates what is really possible it it is remembered that (1) not all the owned land but only lands held under personal cultivation are to be subject to ceilings; lands held by tenants are to accrue to the present tenants themselves under tenancy legislation on payment of compensation and will not be available for redistribution; (2) landholding censuses have been held in different states on a divergent basis so that in many states very much less land is revealed as "surplus" than there really is; and (3) the ceilings legislation is being widely forestalled.

9. In Andhra, for example, an income of Rs. 5,400/- would require 30 acres of riceland, 15 acres of irrigated land, 45 acres of millet land, and 10 acres of commercial crop land at current prices.

of land for accommodating all claimants may be greater than if ceilings were fixed without an income criterion; the administrative difficulty of imposing ceilings would increase; and the aim of reducing inequalities in the rural sector is likely to be very imperfectly realized because of wide disparities in ceilings in different areas.

If ceilings are imposed according to these principles, it would be evidently impossible to give land to all the claimants held to be eligible by the Planning Commission. The logic of facts requires that the ceilings be much lower and that there should be fewer exemptions, or else there must be discrimination in distribution.

But what is logically necessary to achieve the single objective of giving some land to all claimants involves the sacrifice of other equally important social objectives. And what is possible logically may not be possible politically and administratively. It is therefore necessary to consider ceilings from the point of view of other objectives.

"Equality" in the Village and in the City

While arithmetic suggests that a 30-acre ceiling is too high, the opponents of ceilings regard it as intolerably low. A typical 30-acre holding could yield in normal conditions a net income of only about Rs. 3,600/- per year with current techniques and at current prices, which is just about three times the average income of an agricultural family. This income, it is argued, would be too low to permit cultivators to give their children any general or technical education. The income of the overwhelming majority of farmers at or near the floor would be much lower, and their position much worse. They would continue to depend on non-agricultural employment for a major part of their needs. Inheritance would reduce even the ceiling cultivators to the floor level within a generation or two. Such an absolute freezing of property in the rural sector would be extremely iniquitous in the absence of a similar restriction of urban property and income.

The reply to this objection has been that, simultaneously with land reform efforts are being made to reduce inequalities in the urban sector through progressive taxation of income and wealth, estate duty, expansion of the public sector, and measures to improve the incomes of the poorer section of city-dwellers.[10] But it can hardly be denied that none of these measures would put such an absolute, and rigid limit on the possession of property and income in the city as ceilings would do in the village. Such limitations would, on the one hand, drive the more intelligent and the more enterprising farmers from the village and, on the other, reduce the mobility of the labor surplus in the countryside.[11]

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10. Recently, the Prime Minister emphatically repudiated the demand for a ceiling on urban income, while advocating a ceiling on land holding, on the ground that the former would "slow down a process of dynamism" and reduce production. (Statesman Overseas Weekly, January 10, 1959.)

11. It is true that a ceiling on land ownership is not the same thing as a ceiling on personal income, but the whole controversy has to be viewed against the background datum that the gap between the growth rate of population and of non-agricultural employment is going to remain large for a long time yet.

Ceilings and Production

By far the most important argument against ceilings is that they may adversely affect agricultural production and investment and reduce the marketable surplus. Considering the gravity of the food situation, the magnitude of food imports, and the consequent burden on foreign exchange resources, the country can hardly afford any measures which may reduce agricultural production, even for a short period. The Planning Commission stated in the Second Plan that

> increase of agricultural production represents the highest priority in planning over the next few years.[12]

And recent experience shows how risky it is to be misled by two or three good-weather years into premature optimism about the food supply.

Ceilings may depress agricultural production in many ways. It has been said, in the first place, that proposals to impose ceilings have already caused so much uncertainty in the minds of large landowners that they have almost suspended further investment in agriculture. They have either taken steps to evade land reform laws by parcelling out their large holdings amongst their kin; or they are thinking of giving up agriculture altogether. It would not always be possible to enforce ceilings with retrospective effect from a date sufficiently far back in the past to nullify the effect of all the evasive transactions that have been completed in the last 10 years of inconclusive discussion. After the abolition of intermediaries, a large number of ex-landlords, especially those in the younger age-groups, began to introduce significant improvements and make large investment on the lands which they resumed for personal cultivation, in order to earn larger incomes from their personal holdings in place of the lost rents. Much of their energy which used to be spent in rack-renting, usury, and social extravagance began to be applied to the improvement of agriculture. A significant proportion of the increase in agricultural production and the area under cultivation in some areas where zamindari tenure was effectively abolished has been due to this shift in the interest of the enterprising sections of the old landlords from rack-renting to improved farming. In the immediate future, ceilings may deprive the countryside of the investment and enterprise of this class.

This, however, may be true only of some areas, such as Western Uttar Pradesh. It cannot be generally maintained that the imposition of ceilings would lead to the break-up of efficient large-scale farms. For it is a well-known fact that in India the large landholders have always got their holdings cultivated in small plots by sharecroppers and landless workers, so that the operational holdings were small even on large ownership holdings. Ceilings cannot be blamed for breaking up large, efficient private farms which do not in fact exist in any significant number except in a few specialized crop-areas. In this respect, the effect of land reform is likely to be very different from that in countries with large well-managed estates operated with hired labor.

But ceilings would, if they are low, of course, involve a reduction of the size of such above-ceiling large and medium farms as do exist, to the ceiling size. These may constitute a small proportion (less than 10%) of farms, but they

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12. Second Five Year Plan, op. cit., p. 177.

probably supply a higher proportion of the marketed surplus and lead in and inspire the adoption of better techniques. Putting a lid on the ambitions of their owners may have an effect on agricultural production and surplus out of all proportion to their number.

At the same time, ceilings would create millions of very small holdings of 2 acres each. These are not likely to produce much, at least for some years, even if the massive aid required by them is organized in their favor, and the incentive of new ownership comes into full play. It is reported that in Pepsu the application of a ceiling has already led the owners of some mechanized farms to sell them out. All the new allottees of land may not turn out to be efficient independent farmers. There have been cases of landless persons having given up cultivation a few years after land was allotted to them; and, on the whole, the experience of cooperatives of the landless aided by the government has so far been extremely discouraging from the point of view of net return per acre and per man.

Finally, it may be noted that at least two committees, namely, the Famine Commission and the U. P. Zamindari Abolition Committee, have taken the view that even if the redistribution of land increases production, it would reduce the marketable surplus, for small farmers tend to retain a larger proportion of their produce for self-consumption than large farmers.

So far as production and investment are concerned, then, it seems that the application of ceilings involves considerable risk--at any rate, in the short run. Production on farms which surrender land is likely to react adversely; production on the new small farms is likely to increase only after a time lag. And the agricultural surplus is most likely to decline. The only class of farmers whose production might respond positively and without much time lag are the tenants who are enabled by land reform to continue to hold their present holdings in security at reduced rents.

As noted before, ceilings are being applied only to land owned and "personally cultivated", including that held under permanent heritable rights. The area already held by tenants is proposed to be redistributed merely through provisions in tenancy laws enabling tenants to acquire ownership of the plots cultivated by them by paying a fixed low compensation in easy installments.

This treatment of rented land has the effect of reducing the area available for direct redistribution amongst the landless and the smallest holders. But on the other hand, it reduces the size and the financial incidence of the direct land redistribution operation. If tenants do take advantage of the enabling provisions to acquire ownership, rented land can get redistributed indirectly. But experience so far indicates that very few tenants do so, partly because of lack of resources and partly because other provisions of tenancy laws (security of tenure, fair rent etc.) make it unnecessary for them to try to become "owners". Mr. P. N. Rosenstein-Rodan has rightly pointed out that even

> Rent Stabilisation Acts as well as Acts which make the eviction of the tenants practically impossible amount to an Agrarian Reform, although it is not implemented in the legal form of redistribution of ownership.[13]

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13. P. N. Rosenstein-Rodan, "Remarks on Economic Effects of Agrarian Reform" (hectographed), Cambridge, Mass., May 12, 1954, p. 4.

Finance

In order to carry out the land redistribution program, sufficient finance has to be found, first, for paying compensation to those whose surplus lands are acquired for distribution, and second, for providing resettlement grants and production loans to the new recipients of land. The Planning Commission has recommended that compensation should be fixed as a multiple of land revenue and paid in bonds redeemable in 20 years. The allottees of land should be required to pay 20 times the "fair rent". On the basis of the Planning Commission's proposals, the total compensation has been estimated roughly at Rs. 12 billion. Some parties have proposed that no compensation should be paid--at least by the landless and those who get less than 1 acre; others have suggested that compensation should be calculated on the basis of less than fair rent.

But it is difficult to see how, apart from free gifts, it is possible within a democratic framework to acquire land throughout the country without paying reasonable compensation, though it may be possible to keep the level of compensation at a figure much lower than the market value of land. Even then, the burden of compensation can be kept within manageable limits only by making the new recipients of land share it to a sizeable extent; but while tenants perhaps can pay for becoming owners, the landless can hardly be expected to do so.

In the case of transfer of ownership to tenants, Mr. Rosenstein-Rodan suggests that rent payments by them should not only be equal but even higher than the compensating debt service, in order that agricultural investment may not decline. In his view,

> rent payments by new owners of agrarian reform holdings should amount to somewhat more than the annual debt service payment on bonds given by the State to the landowners. The difference should be used for the purpose of capital formation by the government which would thus compensate in part for the fall in the supply of savings by the landowners.[14]

The new peasant owner may pay for his land in 20 to 30 annuities corresponding to between 50 to 75% of his former rent payment plus another 10 to 15% which may be automatically re-lent to him for investment. The Planning Commission's proposals, however, would require the new allottees of land to pay only the fair rent, i.e., 1/4 or 1/5 of the produce, which is only about half of the rent payments that they have been accustomed to make. This would no doubt improve the position of the new owners. But it would leave a heavy burden on the exchequer and may reduce agricultural investment. Therefore, measures both to induce tenants to acquire ownership and to pay compensation for it--and perhaps even more for reinvestment--are necessary. Whether they would be practicable is another matter.

But the crux of the financial problem arises not in the case of the tenants but in the case of the landless. They not only cannot pay for ownership, but would need liberal credit facilities and even generous resettlement grants to be able to operate. (Resettlement of the landless even in Bhoodan areas has involved the payment of large sums as grants, as in Bihar and Orissa.) How are funds to be found both for payment to the landlords as compensation and to the landless as

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14. Rosenstein-Rodan, op. cit., p. 6.

grants? Perhaps it is not impossible, but both taxation and borrowing for the purpose on the scale required would have the effect of diverting scarce resources from other important uses and undesirable distributional effects. As for credit, at present agriculturists are unable to get more than a small fraction (10.3% of total expenditure of their credit needs). If the number of smallholders increases by several millions due to the enforcement of ceilings, the deficiencies of credit will become graver still. The normal agricultural credit and village industries programs can hardly cater to the needs of the new settlers. It would therefore be necessary to find additional resources for meeting the credit needs of the new peasants.

It would also be necessary to organize technical help on a vast scale if the landless and the marginal peasants are expected to be set up as reasonably efficient farmers in a short time.

Finally, it has been asked whether the administrative machinery, which is already burdened with the task of implementing a number of other land reform measures, and has achieved only moderate success, is in a position to undertake land acquisition, redistribution, and resettlement operations on a large scale. The Planning Commission has acknowledged that

> Land reform imposes upon the machinery of the government large administrative responsibilities and... tasks of great complexity to which many State administrations may not yet feel equal...[15]

The preceding considerations are best summarized in a passage in the Draft Outline of the First Five Year Plan, as follows:

> The proposal to limit existing holdings raises important problems of final administration and management. Whether the States give compensation, or under another name, rehabilitation grants, the task is likely to be far beyond their resources. The available administrative machinery is in no position to cope in any systematic manner with the problems of acquisition on the vast scale which appears to be contemplated. The distribution of the land acquired from individual owners among various classes of claimants--small owners, tenants and landless labourers will present numerous practical problems involving basic social conflicts. Moreover, the land which is acquired will consist as a rule of fields scattered over the whole village and generally it will not be possible effectively to organise either collective farming or State management. On the larger farms, production will fall and, for a period at any rate, on other farms also, it may well be that the decline in production may have a serious effect on the well-being and stability of rural society as a whole. It is possible that any large-scale and sudden attempt to break up existing holdings may give rise to such organised forces of disruption as may make it extremely difficult to bring about the very transformation in the organisations of agriculture which is needed. In the conditions of India, peaceful and democratic change is likely to be the most lasting. It is, therefore, necessary to ponder carefully over the practical results of a policy of ceilings on individual holdings.[16]

15. Second Five Year Plan, op. cit., p. 180.

16. Government of India, Planning Commission, The First Five Year Plan: A Draft Outline, New Delhi, 1951, pp. 99-100.

But as we have seen, doctrinaire enthusiasm at the Center has prevailed over a calm consideration of the real problems faced by the states. No satisfactory solutions have been proposed by the Planners for the difficulties pointed out. The ceilings and the exemptions proposed make it impossible to accommodate all the claimants for land. The objections raised on grounds of rural-urban equity, paucity of finance, and lack of administrative preparedness remain unanswered. One can only anticipate that almost all states will soon have enacted legislation on ceilings under Central pressure, as they have enacted numerous other land reform laws, but owing to very real difficulties the laws will remain by and large unimplemented. The status quo will continue to prevail in the villages, except that the uncertainty created might lead to a weakening of incentives.

The Uttar Pradesh Heresy

It is interesting to find that in Uttar Pradesh, the government has evolved a novel approach to the problem of disparity in agricultural property. While admitting the case for redistribution of land, it has refused to follow the Central Government's policy of imposing ceilings, mainly on the ground that it would not be possible to give even half an acre to the millions of claimants of land. Instead, it has enacted a Large Landholdings Tax Act which imposes a graduated tax on landholdings exceeding 30 acres (excluding orchards) and yielding an income of not less than Rs. 3,600/- per annum.[17] It is expected to yield Rs. 12 million annually, in place of Rs. 5.5 million yielded by the old agricultural income tax on incomes exceeding Rs. 4,200/- per annum, which has been evaded on a large scale. The government has argued that the new act would, in effect, tend to break up large holdings and thus bring about a redistribution of land without involving large compensation expenditures or raising intractable administrative problems. The one disadvantage of the measure is that there is no control over the transfer of land that it induces. But since there is already a ceiling on future acquisition, no purchaser would be able to buy an area which makes his holding exceed 30 acres, and thus the land sold would go to small holders. There is no assurance, however, that it would go to the landless or to those small farmers who do not have the wherewithal to pay its full price.

Inasmuch as the act has avowedly been passed as a substitute for the imposition of ceilings, it has been criticized as "reactionary". But the Revenue Minister, on the other hand, looking beyond the redistribution of land, argued that though a minimum of 2 acres of land could be given to the 260,000 landless families in the state, "division of land in small plots to a large number of landless people or poor peasants will bring about an uneconomic organisation of agriculture ... The derelict new present proprietors would submit more readily to a policy of collectivisation."[18]

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17. The tax rate varies from 5% on land of Rs. 5,000/- annual valuation to 60% on land of annual valuation exceeding Rs. 30,000/-.

18. National Herald, September 13, 1958.

Ceilings and the Size of Farms

This brings us to the relationship between the controversy about ceilings and those between large-scale and small-scale farming, and between different types of large-scale farming, namely, capitalist farming, cooperative joint farming, collective farming, and state farming. Since ceilings are intended to produce an agrarian structure with a universal small holding, the case for ceilings is tenable only if the desirability of small-scale peasant farming is broadly accepted. Those who are convinced of the superiority of large-scale farming should logically oppose the application of ceilings. But it is a curious fact that in India the strongest advocates of large-scale farming are also the strongest supporters of ceilings on land. Indeed, few of the advocates of ceilings (with the possible exception of some Bhoodan leaders) really believe in small-scale peasant farming. This apparent paradox can be understood if it is remembered that those who demand very low ceilings and the distribution of one to two-acre plots to every agricultural family have almost invariably in mind a policy of persuading, inducing, or coercing the millions of new landholders to join joint farming cooperatives or collectives of one form or another, either as a condition of land allotment or at a later stage. It is thus that a faith in ceilings and a faith in large-scale farming is reconciled. The "strategy" assumed consciously or unconsciously is as follows: at the present stage, the injustice of large-scale farming is emphasized and the widest possible distribution of land is demanded in the name of social justice. But as soon as the distribution has come about, the inefficiency and bankruptcy of small-scale farming is to be emphasized, and large-scale farming established through cooperativization or collectivization. One may wonder why farms should be divided only to be reunited later in cooperatives and collectives. But it is the essence of the so-called "socialistic" agrarian policy that ceilings are only a tactical stage in the strategy culminating in collectivization.

The fact that the advocacy of ceilings is invariably linked up with a belief in ultimate cooperativization or collectivization may be easily illustrated. In the Second Five Year Plan itself, the program to fix ceilings is rigidly linked with a program to introduce cooperative farming. And cooperative farming, according to the planners, "necessarily implies pooling of land and joint management."

"Settlements on these lands [surplus areas which become available with imposition of ceilings on agricultural holdings] should, as a rule, be made on cooperative lines."

"The general aim should be to bring below basic holdings increasingly into the cooperative pool."

"The aim would be to enlarge the cooperative sector until the management of the entire land in the village becomes the cooperative responsibility of the community."[19]

These recommendations make the distribution of land a direct and necessary antecedent of compulsory joint farming.

The Agrarian Reforms Committee had stated as early as in 1949 that:

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19. Second Five Year Plan, op. cit., pp. 204-205.

> We do not recommend that the surplus land acquired should be generally used for the purpose of making uneconomic holdings economic and according to us should be, subject to the rights of the tenants, used for the purpose of cooperative joint farming...[20]

Most recently, the Agrarian Policy Resolution passed at the 64th Session of the Indian National Congress reaffirmed that surplus land should be vested in village panchayats and be managed by cooperatives of the landless; and that the future agrarian organization of the country must be cooperative joint farming, though in the next three years service cooperatives might be organized.[21]

On the opposite side, an eloquent example of the manner in which the distribution of land is linked up with a policy of ultimate collectivization is to be found in a memorandum on "Ceilings on Landholdings", submitted by Shri N. Prasada Rao, General Secretary of the communist All-India Kisan Sabha. This memorandum contains a strong plea for a ceiling at two family holdings, a strong case for small-scale peasant farming, and an argument against the imposition of any floor so that every poor peasant and agricultural laborer and displaced tenant may have a piece of land, no matter how small in size. But it is made clear

> that in the context of present agrarian conditions and consciousness of the mass of peasantry, the first and foremost duty of any land reform is, taking over land of the landlords and giving it to the poor peasants and agricultural labourers. This will be the first step and not the finale of land reforms. Gradually, by education, persuasion, encouragement through experiments and State farms, cultivators should be induced to take to cooperative farming which may come about through a series of intermediary stages. This is how land reforms are being implemented in China and the People's Democratic countries of Europe.[22]

The nature of the "inducements" in Communist China and Southeastern Europe need not be discussed here. The point is that in all the above proposals ceilings are visualized as a prelude to joint farming. Now, if the ultimate aim is merely to place the agricultural laborers back into large-scale farming under a managerial bureaucracy, the slogan "land to the tiller" appears to be a deception. For then giving land to the tiller in the immediate future is meant only as a means, so to speak, of later giving the land as well as the tiller over to a manager. What is intended for him is just a change from landlessness under a large owner-cultivator to landlessness under a manager.

The slogan "land to the tiller" can sound genuine only in the programs of those who believe in "the magic of small property", and the small farm--i.e., those who are "distributists" at heart. But most of those who ask for ceilings

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20. Indian National Congress, Agrarian Reforms Committee, Report, New Delhi, 1951, p. 24.

21. On other aspects of the controversy about cooperative farming, see Raj Krishna, L. C. Jain, and Gopi Kroshnan, Cooperative Farming: Some Critical Reflections, 1957; and Raj Krishna, "Socialism and Farming", Statesman, June 19, 1957.

22. N. Prasada Rao, "Ceiling on Landholdings" (mimeographed), n.p., n.d., p. 20.

have nothing but contempt for the small farm. For them the "ceilings" are not "ceilings", but merely steps towards the high platform of general agricultural collectivization. They are not distributists but collectivists at heart--or the unconscious allies of the collectivists.

The Two Visions

The pros and cons of small-scale peasant farming and large-scale joint or collective farming in overpopulated agrarian countries need not be recapitulated here. But in India, as in other densely populated countries, people generally choose between two broad visions of the future agrarian society: (1) the vision of a village of peasant proprietors or secure tenants with small, consolidated, independent holdings, aided by service cooperatives in respect of supply, credit, and marketing and the use of expensive equipment; and (2) the vision of a village of one or a few big cooperative or collective farms, managed by bureaucrats, controlled by the state, with collective cultivation and/or collective ownership and with members performing their assigned tasks and receiving wage-payments according to work norms. There are, of course, all kinds of intermediate arrangements between these "poles" of the owner-cultivated family farm and the state-dominated collective farm, but even in the choice of the intermediate forms, everyone starts from a predilection in favor of one or the other of the polar models, and the predilection influences the degree to which individualist and collectivist elements would be combined in any "cooperative" arrangement and the direction in which the arrangement would be modified subsequently.

Redistribution of land can be pressed in the service of either of the two major visions. In order that it may facilitate the realization of the first picture, it should be accompanied by effective tenancy reform, consolidation of holdings, reorganization of credit and marketing, and the organization of an effective extension service specially designed for small farmers as <u>preconditions</u>. The principle of redistribution and the small family farm should be widely canvassed and accepted either as a desirable social form and/or as a necessary evil imposed by the land-man ratio. And all effort must be concentrated on helping and inducing the small family farmer to produce the maximum possible output per acre through extension and service cooperatives--as in Japan. As the preceding discussion suggests, urban property should be restricted, as well as property in land. As much non-agricultural employment should be created in or near the villages as possible to supplement farm income. Ceilings should be low enough to accommodate all claimants. There should be few exemptions, and exempted large units should be effectively "socialized". Compensation should be low and paid over a long period of time. Recipients of land should be made to pay a graduated part of compensation according to capacity. Ceilings should be applied not rapidly by predetermined dates, but according to the preparedness of the administration in terms of knowledge, funds, and personnel. Sufficient funds must be found, as are found for other creative programs, and the fiscal arrangements relating to redistribution should be coordinated with general fiscal policy, so as to avoid undesirable distributive effects <u>on balance</u>. And there should be no insistence on joint farming.

If, on the other hand, the collectivist vision is sought to be realized, it seems to be somewhat hypocritical to redistribute "land to the tillers" in small plots, as a prelude to general collectivization. Land should be nationalized

outright, taken over by the state against no or nominal compensation and managed directly or indirectly in collectives of suitable size with members of various categories with defined rights and work-norms. The plan may be realized in stages--stages only in the sense that land now belonging to certain categories of landholders (say those with more than 40 acres) may be taken over first and of others afterwards, and collectives of certain categories of members (say the completely landless) may be formed first and of others (the displaced tenants, the smallest farmers, the medium farmers, etc.) afterwards. Ceilings should then be used just as an abstraction to determine how many members receiving labor dividends (there should be no land dividends) can be admitted to a collective of a certain size. This would be a consistent policy instead of a policy of manoeuvering the peasantry into collectives through "tactical" stages in which they are "prepared" for the following stages with consciously designed make-believe slogans like "land to the tiller" promising ownership and operational freedom,both of which are really sought to be taken away from them. The peasants of a democracy with adult franchise at least deserve not be consciously misled about what the intelligentsia really intends for them. Indeed, if collectivization is the aim, they may well be asked about it in a referendum.

The foregoing enumeration of the implications of the two ideological models presupposes that there are no autonomous, impersonal "economic" forces at work and the models have only to be chosen to be realized. The presupposition is, of course, untrue. Neither the scale nor the organization of production units in a fairly exposed economy are entirely a matter of choice by politicians and lawmakers. Both are determined in a large measure by the conditions of economic survival in changing demand and supply conditions. And it would require a different kind of analysis to find out the scale and the type of organization of farming operations that are most likely to win in different crop regions and other economic conditions, regardless of the wishes expressed in manifestoes.

One or two remarks of an "economic"kind may be made, however. Agrarian egalitarianism expresses itself in a demand for the redistribution of land because land is presumably regarded as an almost infinitely divisible means of production. In the industrial sector egalitarianism expresses itself not in a demand for the redistribution of physical assets but only of the income generated--through wage regulation, taxation, or nationalization--because unlike land, industrial assets are usually regarded as "indivisible". It follows that if the economic limits of the divisibility of land were more generally recognized, agrarian egalitarianism would also have a different emphasis. It would also demand more employment, minimum wages, and efficient management and progressive taxation of large private farms rather than their physical break-up. Secondly, whatever distribution of farm property and farm income may be achieved by a successful land reform, it is likely to be upset in a short time by changes in techniques, irrigation, crop patterns, and prices, unless the economy is static or closed. And inequalities once remedied would reappear.

In this way the logic of demand and supply and the logic of institutional preferences interact. And one dare not prophesy the outcome. But one may at least expect that alternative policy models be internally consistent. One may also perhaps hazard the guess that in the near future while other more "revolutionary" but less "leftist" land reforms will succeed in increasing measure, redistribution of land is not likely to make much real headway in the village even though much legislation is passed--nor for that matter is joint or collective farming. For the present policy regarding both is internally inconsistent and largely impracticable, and the notion of joint farming runs counter to the deepest expressed and unexpressed sentiments of India's peasantry. Redistribution can be made to make headway, albeit slowly, with the appropriate changes in policy discussed above; but it is doubtful if joint farming can be made to progress at all in the near future.

SAVINGS AND CAPITAL FORMATION*

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This article is concerned with the trends in savings and capital formation in India since 1950-51, that is, the beginning of the First Five Year Plan period. Section I deals with the volume and pattern of investment, while Section II is concerned with the volume and pattern of savings. The final section discusses the prospects regarding the implementation of the investment targets of the Second Five Year Plan and draws certain conclusions from the Indian experience regarding the economic development of India and other similar underdeveloped countries.

It should be admitted, right at the beginning, that apart from the non-availability of any precise estimates regarding savings and investment, even the factual basis for making any firm estimates is totally inadequate. Under the circumstances, no fair degree of accuracy or precision is claimed for the various estimates presented in this article; these estimates at best indicate only rough orders of magnitude.

I. Volume and Pattern of Investment

Private Investment. The Planning Commission gives estimates since 1951-52 regarding private fixed investment in the organized industrial sector only; no estimates, however, are available regarding investment in inventories in the organized industrial sector. Further, no reliable estimates are made so far regarding investment in housing, agriculture, non-farm sector in rural areas, and the non-industrial urban sector. The first task naturally therefore is to make estimates regarding such private investment for which no information is at present readily available.

Organized Industrial Sector. The estimate for fixed investment in this sector for 1950-51 is taken from the Report of the Taxation Enquiry Commission. The investment in inventories is estimated from the relationship between fixed investment and inventory accumulation obtained from the Reserve Bank of India's studies on company finances. The average ratio between the increase in inventories and fixed investment for the period 1946-51 is used for estimating the invest-

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in inventories during 1950-51, while the average ratic between the increase in inventories and fixed investment during 1951-55 is applied to the fixed investment for each year since 1951-52 for estimating the investment in inventories for the years 1951-52 to 1957-58.

Urban Residential Housing. The Taxation Enquiry Commission has estimated the investment in urban residential construction for the year 1950-51 on the basis of the increase in the gross rental from urban house property and an average rate of return of 5 percent per annum. The proportion between the estimated investment in urban residential construction and national income of about 0.01 for the year 1950-51 is assumed to remain constant for the remaining years for which national income estimates are available, and on this assumption, the investment in urban residential construction is estimated for the years 1951-52 to 1956-57. For the year 1957-58, such investment probably was a little smaller than in the preceding year because of intensified import restrictions, tightening of control on the distribution of steel and cement, and somewhat restrictive credit policy.

On the basis of figures regarding consumption of steel and cement, it appears that investment thus estimated is probably smaller than the actual investment since 1954-55.

Rural Housing, Agriculture, and Other Non-Farm Investment. The All-India Rural Credit Survey collected some useful information regarding gross investment in the rural area for the year 1951-52. This sample survey, however, had certain limitations. For example, the data on capital expenditure are only of families resident in selected villages and do not include expenditure of families residing outside but owning land in these villages. The data pertain to cash expenditure only, and therefore exclude payments in kind, such as for labor or for hire of machinery used in reclaiming land, digging wells, and in similar other projects. Expenditure on account of family labor or of owned equipment are also excluded. Finally, the data also exclude real investment through group labor as in Community Development Project Areas and investment in inventories.

Subject to these limitations of the Survey data and the margin of error related to the sample, the gross investment in agriculture, rural housing, and the rest of the rural sector is estimated for the year 1951-52. The replacement investment is assumed to be about 50 percent of the total gross investment, and on this assumption net investment is estimated for the year 1951-52. The proportion between net investment so estimated and the national income from agriculture of about 0.025 for agriculture, 0.015 for rural housing, and 0.01 for the rest of the sector for the year 1951-52 is applied to the national income from agriculture for the years 1950-51 and 1952-53 to 1956-57 for deriving investment in agriculture, rural housing, and the rest of the rural sector, on the assumption that these proportions held good for these years too. Investment during 1957-58 is assumed to be the same as that during 1956-57.

Other Urban Investment and Errors and Omissions. Because of lack of any basis for estimating investment in the rest of the urban sector, it is not possible to make any estimates regarding such investment. However, it is likely

Table I. Private

	1950-51	1951-52	1952-53	1953-5
1. Organized industrial sector	55	26	27	44
2. Investment in inventories	36	11	12	19
3. Total organized industrial sector	91	37	39	63
4. Urban residential housing	95	100	98	105
5. Rural Housing	83	85	82	90
6. Agriculture	122	125	120	133
7. Other non-farm rural investment	49	50	48	53
8. Other investment and errors and omissions	-	-	-	-
9. Total	440[b]	397	387	444

a. Includes investment in stocks, transport other than railways, and plantation

b. Planning Commission's unofficial estimate is 285.

c. Planning Commission's unofficial estimate is 1,700.

Investment (at current prices)

Rs. Crores

1953-5	1954-55	1955-56	1951-56 Actual	1951-56 Expected at 1950-51 prices	1956-57	1957-58	1956-61 Expected at 1952-53 prices
44	50	85	232	233	140	140	617
19	22	37	101	-	61	61	-
63	72	122	333	233	201	201	617
105	96	100	499	-	114	100	1,000
90	74	77	408	-	97	95	
133	109	113	600	-	147	147	300
53	43	45	239	-	57	57	
-	-	-	-	-	-	-	483[a]
444	394	457	2,079[c]	1,770	616	600	2,400

Sources: Government of India, Ministry of Finance, Report of the Taxation Enquiry Commission, Vol. 1, Delhi, 1955.
Government of India, Planning Commission, First Five Year Plan, Delhi, 1952.
Government of India, Planning Commission, Review of the First Five Year Plan, Delhi, 1956.
Government of India, Planning Commission, Second Five Year Plan, Delhi, 1956.
Government of India, Planning Commission, Appraisal and Prospects of the Second Five Year Plan, Delhi, May 1958.
Reserve Bank of India, All India Rural Credit Survey, Vol. I, Bombay, 1954.
"Finances of Indian Joint Stock Companies, 1950-55", Reserve Bank of India Bulletin, September 1957.

that the underestimation in private investment and in urban residential construction since 1954-55 is offset by the overestimation in rural investment as a result of possible underestimation of replacement investment. Table 1 presents the estimates regarding private investment at current prices since 1950-51.

Public Investment. The Planning Commission gives estimates for public investment for 1950-51 and for the First Five Year Plan period as a whole; however, it does not give such estimates for individual years of the First Plan period. From 1951-52 onwards, the Commission presents estimates regarding total development expenditure, which includes non-investment expenditure also. By applying the ratio between actual investment and actual development expenditure during the First Plan period as a whole to the development expenditure for each individual year, investment for each year of the First Plan period is estimated. Similarly the ratio between expected investment and expected development expenditure during the Second Five Year Plan period as a whole is used for estimating investment during 1956-57 and 1957-58 and expected investment during 1958-59. All these estimates at current prices are shown in Table II.

Table II. Public Investment (at current prices)

	Rs. Crores	
	Actual	Expected
1950-51	185	-
1951-52	199	-
1952-53	205	-
1953-54	260	-
1954-55	363	-
1955-56	473	-
1951-56	1,500	1,780 (at 1950-51 prices)
1956-57	528	-
1957-58	710	
1958-59		790 (at 1957-58 prices)
1956-61		3,800 (at 1952-53 prices)

Sources: Government of India, Planning Commission, works cited in Table I.

Trends in Investment. Investment--both private and public--at current prices is converted into constant prices (1948-49 prices) in Table IIIA. During the period 1950-51 to 1957-58, investment increased at an average annual rate of 11.8 percent; public investment during the same period, however, increased at a much higher rate of 22.6 percent, while private investment increased at the rate of only 5.4 percent. The ratio of public investment to total investment, as a result, increased from 29.6 percent during 1950-51 to 54.1 percent during 1957-58. The average share of public investment in total investment during 1950-51 to 1957-58 was 44.1 percent. Total investment as a percentage of national income increased from 6.6 during 1950-51 to 10 during 1956-57 (Table IIIB).

During the First Plan period, public investment was a little less than what was expected, while private investment exceeded its target substantially; as a result, total investment was larger than expected. During the first two years of the Second Plan period, private investment was about 50 percent of what is expected during the entire Plan period, while public investment was only about one-third of the expected investment during the Plan period (Table IIIA).

Investment Pattern. The Planning Commission gives data regarding development expenditure only under various heads for the First Plan period. With a view to deriving the investment expenditure under various heads, the ratio between total actual investment and the total development expenditure during the First Plan period is applied to the development expenditure under each head. For the Second Plan period, the Planning Commission gives combined data for the first three years, by adding the actual data for the first two years to the expected data for the third year for development expenditure under various heads. The development expenditure for each year under various heads is derived by applying the ratio between the total actual expenditure in each year to the total expenditure during the first three years of the Second Plan period. Then the ratio between expected investment and expected development expenditure for the entire Plan period for each item is used for estimating the investment expenditure under various heads during 1956-57 and 1957-58. These estimates are presented in Table V. The data regarding the pattern of private investment are shown in Table IV, and the data regarding investment pattern for the entire economy are given in Table VI.

During the First Plan period, the rural and urban housing investment share in the total private investment was the largest (43.5 percent), while the share of agricultural investment was 28.7 percent, and that of investment in the organized industrial sector was 16.3 percent. The relative shares changed considerably during the first two years of the Second Plan period, when the share of investment in the organized industrial sector was almost as large as that of investment in housing, while the share of agricultural investment declined to about 24 percent of the total private investment (Table IV).

The emphasis during the First Plan period with respect to public investment was quite naturally on the development of basic facilities like irrigation and power, transport and communications, and agriculture; the public share of investment in industry and mining was only about 5 percent. The Second Plan emphasis is also on the development of basic facilities, but with greater relative emphasis on industry and mining. The share of agricultural investment declined from 14 percent in the First Plan period to about 9 percent of the total investment in the Second Plan (Table V). Industrial investment in both the public and private sectors thus has received much greater attention in the Second Plan period than during the First Plan period.

In aggregate investment, the share of investment in housing was the largest during the First Plan period, with the second largest share in agricultural investment. The proportion of investment in irrigation and power, transport and communication, and industry and mining to total investment was more or less equal. During the first two years of the Second Plan period, the relative emphasis shifted in favor of industry and mining--whose share in total investment was the largest--and railways at the cost of particularly housing and agriculture (Table VI).

Table IIIA. Volume of Investment (at 1948-49 prices)

Rs. Crores

	Private Investment		Public Investment		Total Investment	
	Expected	Actual	Expected	Actual	Expected	Actual
1950-51	-	409 (265)[a]	-	172	-	581 (437)[a]
1951-52	-	363	-	182	-	545
1952-53	-	373	-	197	-	570
1953-54	-	425	-	249	-	674
1954-55	-	422	-	388	-	810
1955-56	-	479	-	496	809	975 (761)[a]
1951-56	1,719	2,062 (1,683)[a]	1,654	1,512	3,373	3,574
1956-57	-	594	-	510	-	1,104
1957-58	-	567	-	671	-	1,238
1958-59	-	-	747	-	-	-
1959-60	-	-	-	-	-	-
1960-61	-	-	-	-	1,387	-
1956-61	2,311	-	3,659	-	5,970	-

a. Planning Commission's estimates.

Source: Government of India, Planning Commission, works cited in Table I.
Government of India, Central Statistical Organization, Estimates of National Income, 1948-49 to 1956-57, Delhi, 1958.

Table IIIB.

Delhi, 1958.

Table IIIB.

	Public Investment as a % of total investment		Total investment as a % of national income		Annual % rate of increase of total investment		Annual % rate of increase of private investment	Annual % rate of increase of public investment
	Expected	Actual	Expected	Actual	Expected	Actual		
1950-51	-	29.6	-	6.6[a]	-	-	-	-
1951-52	-	33.4	-	6.0	-	- 6.2	-11.2	+ 5.8
1952-53	-	34.6	-	6.0	-	+ 4.6	+ 2.8	+ 8.2
1953-54	-	36.9	-	6.7	-	+18.2	+13.9	+26.4
1954-55	-	47.9	-	7.9	-	+20.2	- 0.7	+55.8
1955-56	-	50.9	8.7	9.3[b]	-	+20.4	+13.6	+27.8
1951-56	49.0	42.3	-	7.2	+17.1[c]	+11.4[c]	+ 3.7[c]	+24.8[c]
1956-57	-	46.2	-	10.0	-	+13.2	+24.0	+ 2.8
1957-58	-	54.1	-	-	-	+12.1	- 4.5	+31.6
1950-58	-	44.1	-	-	-	+11.8[c]	+ 5.4[c]	+22.6[c]
1958-59	-	-	-	-				
1960-61	-	-	10.7	-				
1956-61	61.3	-	-	-	+16.5[c]	-	-	-

a. Planning Commission's estimate is 4.94.
b. Planning Commission's estimate is 7.3.
c. Average rate.

Table IV. Pattern of Private Investme

	1950-51	1951-52	1952-53	1953-54	1954-
1. Organized industries	51	24	26	42	5
2. Inventories	34	10	12	18	2
3. Total organized industries	85	34	38	60	7
4. Urban residential housing	88	91	94	101	10
5. Agriculture	113	114	116	127	11
6. Rural housing	77	78	79	86	7
7. Other non-farm investment	46	46	46	51	4
8. Others including errors and omissions	-	-	-	-	-
9. Total	409	363	373	425	42

Sources: Government of India, Planning Commission, works cited in Table I.
Government of India, Central Statistical Organisation, op. cit.

Investme

(in Rs. Crores at 1948-49 prices)

4	1954-	1955-56	1951-52 to 1955-56	% to total	1956-57	1957-58	1956-57 to 1957-58	% to total	Avg. % annual rate of growth
	5	89	235	11.4	135	132	267	23.0	+22.8
	2	39	102	4.9	59	58	117	10.0	+20.9
	7	128	337	16.3	194	190	384	33.0	+21.9
	10	105	494	24.0	110	95	205	17.7	+ 1.3
	11	118	592	28.7	141	136	277	23.9	+ 2.9
	7	81	403	19.5	94	92	186	16.0	+ 2.8
	4	47	236	11.5	55	54	109	9.4	+ 2.6
	-	-	-	-	-	-	-	-	-
	42	479	2,062	100.0	594	567	1,161	100.0	+ 5.4

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Table V. Pattern of Public Investment

	1951-52	1952-53	1953-54	1954-55	1955-56
1. Agriculture	20	21	27	43	60
2. National extension and community development, including other miscellaneous items	-	1	4	14	25
A. Agriculture and community development	20	22	31	57	85
1. Irrigation and flood control	43	54	60	81	86
2. Power	17	18	21	24	35
B. Irrigation and power	60	72	81	105	121
1. Large and medium industries and mining					
2. Village and small industries					
C. Industry and mining	7	7	13	17	29
1. Railways					
2. Other transport					
3. Communication					
D. Transport and communication	48	47	62	110	134
1. Education					
2. Health	8	10	13	18	26
3. Housing					
4. Other services					
E. Social services	8	10	13	18	26
F. Rehabilitation	19	14	10	13	17
G. Miscellaneous	20	25	39	68	84
Total	182	197	249	388	496

Sources: Government of India, Planning Commission, works cited in Table I.
Government of India, Central Statistical Organisation, op. cit.

Investme

(in Rs. Crores at 1948-49 prices)

4-	1955-56	1951-52 to 1955-56	% to total	Plan provision	% to total	1956-57	1957-58	1958-59	1956-57 to 1960-61	% to total	Avg. % annual rate of growth
3	60	171	11.3	174	10.5	20	27	30	174	4.8	+ 16.0
4	25	44	2.9	63	3.8	20	25	27	151	4.1	+106.8
7	85	215	14.2	237	14.3	40	52	57	325	8.9	+ 24.4
1	86	324	21.4	327	19.7	68	89	98	439	12.0	+ 14.0
4	35	115	7.6	124	7.5	46	60	68	392	10.7	+ 22.5
5	121	439	29.0	451	27.2	114	149	166	831	22.7	+ 16.2
						103	135	150	645	17.6	
						13	18	21	116	3.2	
7	29	73	4.8	131	7.9	116	153	171	761	20.8	+ 75.8
						136	179	198	867	23.7	
						50	66	75	353	9.6	
						8	11	11	66	1.8	
	134	401	26.5	397	24.0	194	256	284	1,286	35.1	+ 31.0
						11	16	18	130	3.6	
	26	75	5.0	96	5.8	11	16	18	118	3.2	+ 19.7
						5	7	7	52	1.4	
						17	19	21	138	3.8	
	26	75	5.0	96	5.8	44	58	64	438	12.0	+ 35.6
	17	73	4.8	95	5.7	-	-	-	-	-	
	84	236	15.7	250	15.1	2	3	4	18	0.5	
	496	1,512	100.0	1,657	100.0	510	671	747	3,659	100.0	+ 23.4

ble I.

Table VI. Pattern of Investme

	1951-52	1952-53	1953-54	1954-55	1955-5
1. Agriculture	134	137	154	160	178
2. National extension and community development including other miscellaneous items	-	1	4	14	25
A. Agriculture and community development	134	138	158	174	203
1. Irrigation and flood control	43	54	60	81	86
2. Power	17	18	21	24	35
B. Irrigation and power	60	72	81	105	121
1. Large and medium industries and mining					
2. Village and small industries					
C. Industry and mining	41	45	73	94	157
1. Railways					
2. Other transport					
3. Communication					
D. Transport and communication	48	47	62	110	134
1. Education					
2. Health	8	10	13	18	26
3. Housing	169	173	187	182	186
4. Other services					
E. Social services	177	183	200	200	212
F. Rehabilitation	19	14	10	13	17
G. Other non-farm investment	46	46	51	46	47
H. Miscellaneous	20	25	39	68	84
Total	545	570	674	810	975

Sources: Government of India, Planning Commission, works cited in Table I.
Government of India, Central Statistical Organisation, op. cit.

(in Rs. Crores at 1948-49 prices)

1955-56	1951-52 to 1955-56	% to total	1956-57	1957-58	1956-57 to 1957-58	% to total	Average % annual rate of growth
178	763	21.3	161	163	324	13.8	+ 3.6
25	44	1.2	20	25	45	1.9	+105.6
203	807	22.5	181	188	369	15.7	+ 6.2
86	324	9.1	68	89	157	6.7	+ 14.6
35	115	3.2	46	60	106	4.5	+ 24.1
121	439	12.3	114	149	263	11.2	+ 17.0
			297	325	622	26.6	
			13	18	31	1.3	
157	410	11.5	310	343	653	27.9	+ 46.0
			136	179	315	13.4	
			50	66	116	5.0	
			8	11	19	0.8	
134	401	11.2	194	256	450	19.2	+ 34.2
			11	16	27	1.2	
26	75	2.1	11	16	27	1.2	+ 21.0
186	897	25.1	209	194	403	17.2	+ 2.5
			17	19	35	1.5	
212	972	27.2	248	245	493	21.1	+ 5.8
17	73	2.1	-	-	-	-	
47	236	6.6	55	54	109	4.7	+ 3.1
84	236	6.6	2	3	5	0.2	
975	3,574	100.0	1,104	1,238	2,342	100.0	+ 14.8

Pattern of Manufacturing Investment. Within the manufacturing sector, the share of investment in capital and producers' goods industries was about 78 percent of the total investment during the First Plan period, as against the expected share of about 73 percent, while the share of investment in the consumers' goods industries was only 21.6 percent. The emphasis on investment in the capital and producers' goods industries has further increased during the Second Plan period. The share of such investment is expected to be about 82 percent of the total investment in manufacturing industries during the Second Plan period (Table VII).

II. Volume and Pattern of Savings

In this section, an attempt is made to estimate the volume of savings through the changes in financial assets and liabilities and through investment resulting from direct conversion of savings into physical assets. For this purpose, the economy is divided into three sectors: (a) government, (b) corporations, and (c) households. The government sector includes central and state governments and all the undertakings owned and operated by them. The corporate sector comprises all joint stock companies (both private and public limited companies) and cooperative institutions. The household sector includes individuals, together with charitable trusts, unincorporated enterprises, and local authorities not included in the government sector.

Government Sector. The Planning Commission gives data regarding the surplus from current revenues of all governments which go to finance a part of the development expenditure of the public sector. Out of this surplus from current revenues is deducted the non-investment items included in development expenditure, in order to arrive at the surplus from current revenues which go to finance a part of public investment. This surplus would constitute the savings of the government sector (Table IXA).

Corporate Sector. The "All-India Income Tax Revenue Statistics" presents data regarding incomes of all joint stock companies, together with their tax liability. The incomes assessable to tax are shown after deducting depreciation, allowed for at the rates permitted under income tax rules. From these data, net incomes excluding tax liability are derived. The estimated net yearly incomes of companies could differ from their actual incomes because of three reasons: (a) the incomes assessable to tax may include some past incomes, not taxed earlier; (b) the depreciation allowed under the income tax rules may differ from the actual provision for depreciation; (c) the taxes actually paid may be different from the tax liability as shown by the income tax authorities.

Out of the net company incomes after tax, the value of dividends distributed, as given in the tax data, is deducted in order to derive the undistributed net profits after tax of the company sector. From the company savings thus estimated, the profits of branches and the retained profits of subsidiaries of foreign companies have to be deducted in order to estimate the domestic savings of the company sector.

Table VII. Pattern of Manufacturing Investment (in Rs. Crores)

	Metallurgical industries	Heavy chemicals, fertilizers, and allied industries	Mechanical engineering industries	Electrical engineering industries	Total of capital and producers' goods industries	Consumers' goods industries	Grand total
1951-56 (Actual)							
1. Public sector	7.85	11.33	22.90	4.19	46.27	8.56	54.83
2. Private sector	50.04	76.35	17.19	35.33	178.91	53.45	232.36
3. Total	57.89	87.68	40.09	39.52	225.18	62.01	287.19
% to grand total	20.2	30.5	14.0	13.7	78.4	21.6	100.0
1951-56 (Expected)							
1. Public sector	32.83	12.28	34.77	2.60	82.48	11.35	93.83
2. Private sector	52.00	92.30	13.45	-	157.75	75.55	233.30
3. Total	84.83	104.58	48.22	2.60	240.23	86.90	327.13
% to grand total	25.9	32.0	14.7	0.8	73.4	26.6	100.0
1956-61 (Expected)							
1. Public sector	402.00	37.00	34.45	21.75	495.20	5.50	500.70
2. Private sector	146.50	149.20	79.60	7.50	382.80	188.37	571.17
3. Total	548.50	186.20	114.05	29.25	878.00	193.87	1,071.87
% to grand total	51.2	17.4	10.6	2.7	81.9	18.1	100.0

Sources: Government of India, Planning Commission, works cited in Table I.

The data regarding profits of branches are available only for the years 1948, 1952, 1953, 1954, and 1955 from the Reserve Bank Studies of Foreign Li bilities and Assets. These calendar year data are assumed to hold good for th financial years 1948-49, 1952-53, 1953-54, 1954-55, and 1955-56. It is further assumed that the branch profits for the years 1950-51 and 1951-52 were the sam as in the year 1948-49 and the branch profits for the year 1956-57 were the sam as in the year 1955-56.

The retained profits of the subsidiaries are available only for the years 1954, 1955, and 1956 from the Reserve Bank Studies. These data are assumed to hold good for the financial years 1954-55, 1955-56, and 1956-57. These actu retained earnings for these three years are then related to the retained earnings of 750 public limited companies whose balance sheets have been analyzed by the Reserve Bank in its Bulletins. This ratio is applied to the retained profits of th 750 public limited companies for the years 1950-51, 1951-52, 1952-53, and 1954 in order to estimate the retained profits of the subsidiaries for these years.

The estimated profits of the branches and the estimated retained profits o the subsidiaries are then deducted from the net company profits after tax in orde to estimate the domestic company savings. To this estimated savings are added the profits of the cooperative institutions, with a view to estimating the total cor porate savings. The savings of the cooperative institutions are somewhat over-estimated, as the data regarding the value of dividends distributed by them are not available and hence are not deducted from their profits (Table IXA).

Household Sector. For estimating the savings of the household sector, the method adopted is to find out the changes in the net assets held by this secto The household savings can be held in the form of (a) liquid assets like currency, bank deposits, and gold; (b) financial assets like shares, securities, and insurance policies; and (c) physical assets like house property which do not involve th creation of any financial assets.

Liquid Assets. The liquid assets comprise currency, bank deposits, and gold. The data regarding currency with the public are readily available in the Reserv Bank publications. The holdings of cash by joint stock companies are estimated from the Reserve Bank Studies of Company Financies and are deducted from the data regarding currency with the public in order to estimate the changes in the holdings of currency by the household sector. A part of the savings so estimate would not be net savings, as the household sector could have acquired currency through sale of assets either to the governments or the banking system. Howev no data are available regarding such sales of assets, which are assumed to be o negligible proportions.

The data regarding the bank deposits held by the household sector are readily available from the Reserve Bank publications. From these data regardi the changes in bank deposits, the changes in advances to the household sector ar deducted, with a view to estimating the net savings in this form of the household sector.

The purchases of gold by the household sector are estimated on the basis of the data regarding domestic gold production and non-official estimates regar ing smuggled imports of gold from abroad. Legally, no imports of gold are per mitted.

Financial Assets.

a. Insurance policies--the increase in the life-fund of the insurance companies, which represents the addition to the insurance companies' liabilities to policy-holders, is taken as an index of the change in the assets of the household sector as a result of its holding of life insurance policies. These data are adjusted for changes in loans and advances to policy-holders, with a view to estimating the net savings in this form of the household sector. All these data relate to Indian insurers and are obtained from the Indian Insurance Year Books.

b. Provident fund contributions--Mr. A. G. Chandavarkar, in an unpublished study, has estimated the provident fund contributions of all wages and salary earners to whom the provident fund scheme is applicable. His estimate is based on the relevant standard rate of contribution and the wage and salary incomes to which the provident fund scheme is applicable. On the basis of the method adopted by him, the provident fund contributions of the wage and salary earners in the public sector, including local authorities, have been estimated for the years other than 1953-54, for which his estimates are made. His estimates regarding the provident fund contributions of wage and salary earners in the private sector for the year 1953-54 are related to the national income of that year, and the ratio so obtained is applied to the national income for other years, in order to estimate the provident fund contributions of wage and salary earners in the private sector.

Government Loans. On the basis of available information regarding the holdings of government (both central and state) securities by the government and the corporate sectors, it is estimated that the holdings of government securities by the household sector are about 20 percent of the total securities issued. This percentage then is applied to the net domestic borrowings of the governments in each year, with a view to estimating the changes in the holdings of government securities by the household sector.

Industrial Shares and Securities. The Quarterly and Annual Review of the Controller of Capital Issues give information regarding the changes in the paid-up capital of joint stock companies. These review also give information regarding consents for new issues, bonus issues, and debentures. The actual debenture issues are estimated by applying the ratio between consents for debentures and new issues to the actual increase in paid-up capital. These estimates for debenture issues are then added to the changes in paid-up capital in order to estimate the total capital actually issued. From this estimate of total capital issued, the new issues of government companies are deducted. Further, the consents for bonus issues and issues to non-residents are assumed to be equal to the actual bonus issues and issues to non-residents, and are deducted from the estimated total capital issued by the private sector.

The changes in the holdings of industrial shares and securities by insurance companies and banks are readily available from Indian Insurance Year Books and the Reserve Bank publications. The changes in the holdings of industrial shares and securities by the joint stock companies have been estimated from the Reserve Bank Studies of Company Finances. These estimated changes in the

Table VIII. Savings of the Household Sector (in Rs. Crores at current prices)

Form of Saving	1950-51	1951-52	1952-53	1953-54	1954-55	1955-56	1956-57	Total 1950-51 to 1956-57
1. Currency with the public	83.0	-111.0	- 17.0	29.3	81.4	192.3	50.4	308.4
2. Deposits	- 7.9	10.8	14.1	13.4	45.2	48.9	79.7	204.2
3. Gold	26.0	26.0	33.5	23.6	13.6	17.0	20.3	160.0
4. Insurance	7.0	29.0	18.0	21.3	24.0	14.0	26.0	139.3
5. Provident fund (central and state)	22.3	13.2	15.2	- 0.9	41.5	7.3	23.7	122.3
6. Provident fund (private)	32.5	34.7	35.7	36.2	36.0	38.2	40.0	253.3
7. Government small savings	33.4	38.5	40.1	37.9	55.2	68.5	59.0	332.6
8. Government loans	- 0.6	- 4.9	2.6	- 0.7	22.2	16.4	28.4	63.4
9. Industrial shares and securities	21.8	4.6	4.2	36.5	31.5	19.9	4.4	122.9
10. Direct investment	349.0	360.0	348.0	381.0	322.0	335.0	415.0	2,510.0
Total	566.5	400.9	494.4	577.6	672.6	757.5	746.9	4,216.4

Sources: Government of India, Planning Commission, works cited in Table I.
Reserve Bank of India, Reports on Currency and Finance, Bombay, various dates.
Reserve Bank of India, Monthly Bulletins, Bombay, various dates.
Government of India, Ministry of Finance, Budget Papers, New Delhi, various dates.
Government of India, Controller of Insurance, Indian Insurance Year Books, New Delhi, various dates.
Government of India, Controller of Capital Issues, Quarterly and Annual Reviews, New Delhi, various dates.
Reserve Bank of India, Statistical Tables relating to Cooperative Movement in India, Bombay, various dates.

holdings of industrial shares and securities of the corporate sector then are deducted from the estimated total capital issued by the private sector to residents (excluding bonus issues) and thus the changes in the holdings of industrial shares and securities by the household sector are estimated.

Direct Investment. The savings of the household sector directly converted into investment in housing, agriculture, and other non-farm investment in the rural sector, have already been estimated and these estimates are shown in Table I.

Trends in Savings. The estimated savings of the household sector are presented in Table VIII and the total savings of all three sectors are shown in Table IXA. These figures are converted into constant prices (1948-49 prices) and the pattern as well as volume of savings at constant prices are presented in Table IXB.

Table IXA. Volume and Pattern of Savings (in Rs. Crores at current prices)

	Government sector	Corporate sector	Household sector	Total	Total savings as % of national income
1950-51	98.0	11.0	566.5	675.5	
1951-52	161.1	25.6	400.9	587.6	
1952-53	59.7	38.0	494.4	592.1	
1953-54	16.5	41.0	577.6	635.1	
1954-55	30.3	16.6	672.6	719.5	
1955-56	- 37.1	36.0	757.5	756.4	
1956-57	64.0	46.0	746.9	856.9	
Total, 1950-51 to 1956-57	392.5	214.2	4,216.4	4,823.1	

B. Volume and Pattern of Savings (in Rs. Crores at 1948-49 prices)

1950-51	91.1	10.2	526.3	627.6	7.1%
% to total	14.5%	1.6%	83.9%		
1951-52	147.1	23.4	366.0	536.5	5.9%
% to total	27.4%	4.4%	68.2%		
1952-53	57.5	36.6	476.1	570.2	6.0%
% to total	10.1%	6.4%	83.5%		
1953-54	15.8	39.2	552.8	607.8	6.1%
% to total	2.6%	6.4%	91.0%		
1954-55	32.4	17.8	719.7	769.9	7.5%
% to total	4.2%	2.3%	93.5%		
1955-56	- 38.9	37.8	794.6	793.5	7.6%
% to total	- 4.9%	4.8%	100.1%		
1956-57	61.8	44.4	720.8	827.0	7.5%
% to total	7.5%	5.4%	87.1%		
Total, 1950-51 to 1956-57	366.8	209.4	4,156.3	4,732.5	6.8%
% to total	7.8%	4.4%	87.8%		
Annual average % rate of increase, 1950-51 to 1956-57	13.5%	53.8%	7.8%	5.4%	

Source: Government of India, Planning Commission, works cited in Table I.
Reserve Bank of India, Monthly Bulletins, op. cit.

The total domestic savings increased at an annual average rate of 5.4 percent between 1950-51 and 1956-57; as a proportion of national income, they declined from 7.1 percent during 1950-51 to about 6.0 percent during 1951-52 to 1953-54, and then rose to about 7.5 percent during 1954-55 to 1956-57, the average proportion of domestic savings to national income during 1950-51 to 1956-57 being 6.8 percent. The savings of the government and household sectors increased at an annual average rate of 13.5 percent and 7.8 percent during 1950-51 to 1956-57, while the corporate savings increased at a much higher average rate of about 54 percent.

As a proportion to total domestic savings, the savings of the government sector, the corporate sector, and the household sector formed respectively 7.8 percent, 4.4 percent, and 87.8 percent on an average during 1950-51 to 1956-57. While government savings as a proportion of total savings declined from 14.5 percent during 1950-51 to 7.5 percent during 1956-57, both the corporate savings as well as household savings as a proportion of total savings increased from 1.6 percent and 83.9 percent during 1950-51 to 5.4 percent and 87.1 percent during 1956-57 (Table IXB).

Investment Estimated through Savings. Investment can also be estimated by adding the estimates regarding net inflow of foreign resources to the estimates of domestic savings.

The sources of inflow of foreign resources are (a) undistributed profits of branches and subsidiaries of foreign companies, (b) net capital receipts from abroad, and (c) net sale of assets owned abroad.

The undistributed profits of subsidiaries have already been estimated earlier. The undistributed profits of branches have been estimated for the years 1950-51 to 1953-54 on the basis of Reserve Bank Studies of Foreign Liabilities and Assets; the annual average undistributed profits during the period 1948 to 1950 are assumed as actual undistributed profits for the years 1950-51 to 1953-54. The undistributed profits for 1954-55 and 1955-56 are readily available from the above-mentioned Reserve Bank studies. The undistributed profits for 1956-57 have been estimated on the basis of past trends.

The data regarding net capital receipts have been obtained from the balance of payments statistics published by the Reserve Bank. Capital receipts include official donations. The data regarding net sale of assets owned abroad have also been taken from the Reserve Bank publications.

Out of the net inflow of foreign resources so estimated, the estimated purchases of gold by the household sector are deducted as they represent foreign investment. The estimates regarding net inflow of foreign resources are presented in Table X.

The estimated net inflow of foreign resources is then added to the estimated savings in order to derive the estimates for domestic investment. These investment estimates at 1948-49 prices are then compared with the investment estimates made earlier, and this comparison is presented in Table XI. There are year-to-year variations between the two estimates; the 1951-52 variation is mostly due to the non-inclusion of speculative building up of inventories as a re-

Table X. Total Inflow (+) and Outflow (-) of Foreign Resources (in Rs. Crores at current prices)

	1950-51	1951-52	1952-53	1953-54	1954-55	1955-56	1956-57	Total 1950-51 to 1956-57
1. Undistributed profits of branches and subsidiaries	+ 20.7	+ 24.1	+ 19.4	+ 24.5	+ 29.4	+ 10.9	+ 23.8	+152.8
2. Net capital receipts	- 1.4	+ 32.2	- 4.3	+ 7.1	- 4.0	+ 36.4	+123.2	+189.2
3. Net sale of assets abroad	- 27.2	+168.6	- 18.5	- 31.0	+ 17.2	- 15.0	+219.0	+313.1
4. Gold	- 26.0	- 26.0	- 33.5	- 23.6	- 13.6	- 17.0	- 20.3	-160.0
5. Total	- 33.9	+198.9	- 36.9	- 23.0	+ 29.0	+ 15.3	+345.7	+495.1
6. Total at 1948-49 prices	- 31.5	+181.6	- 35.5	- 22.0	+ 31.0	+ 16.0	+333.6	+473.2
7. Line 6 as % to national income	0.4	2.0	0.4	0.2	0.3	0.2	3.0	0.7

Sources: Reserve Bank of India, Reports on Currency and Finance, op. cit.
Reserve Bank of India, Monthly Bulletins, op. cit.
Reserve Bank of India, Surveys of India's Foreign Liabilities and Assets, Bombay, 1953 and 1955.

Table XI. Total Domestic Investment (in Rs. Crores at constant prices)

	Total domestic investment (Total of Table IXB + total of Table X) (1)	Total domestic investment as estimated in Table IIIA (2)	Difference between (1) and (2)
1950-51	596.1	581	+ 15.1
1951-52	718.1	545	+173.1
1952-53	534.7	570	- 35.3
1953-54	585.8	674	- 88.2
1954-55	800.9	810	- 9.1
1955-56	809.5	975	-165.5
1956-57	1,160.6	1,104	+ 56.6
Total, 1950-51 to 1956-57	5,205.7	5,259	- 53.3

of the Korean War boom in the earlier investment estimates. For the other years, excepting 1955-56, the variations are not very significant, and regarding total investment during 1950-51 to 1956-57, the variations is just negligible.

Investment and Savings Pattern. The sector-wise data regarding investment and savings are presented in Table XII. It would be seen from these data that both the government and corporate sector draw on the resources of the household sector for financing their investment. For the household sector, its savings exceed its investment, while the case is the reverse with respect to the other two sectors.

Table XII. Savings and Investment (in Rs. Crores at 1948-49 prices)

	Government		Corporate		Household	
	Savings	Investment	Savings	Investment	Savings	Investment
1950-51	91.1	172	10.2	85	526.3	324
1951-52	147.1	182	23.4	34	366.0	329
1952-53	57.5	197	36.6	38	476.1	335
1953-54	15.8	249	39.2	60	552.8	365
1954-55	32.4	388	17.8	77	719.7	345
1955-56	- 38.9	496	37.8	128	794.6	351
1956-57	61.8	510	44.4	194	720.8	400
Total, 1950-51 to 1956-57	366.8	2,194	209.4	616	4,156.3	2,449

III. Prospects and Conclusions

Though the investment-income ratio has been continuously rising since 1952-53, the savings-income ratio, after declining from about 7.0 percent during 1950-51 to about 6.0 percent during 1951-52 to 1953-54, remained more or less constant at 7.5 percent during 1954-55 to 1956-57. In fact, the savings-income ratio declined slightly from 7.6 percent during 1955-56 to 7.5 percent during 1956-57. Thus, the marginal savings-income ratio did not remain appreciably higher than the average ratio. And this fact is not very surprising.

Second Plan projects have a fairly long gestation period. The initial impact of their implementation tends to raise wage and salary incomes but not add to profit incomes. Since the marginal propensity to save out of profits is certainly higher than that out of wages and salaries, the decline in the marginal profits/wages ratio would also mean a fall in the marginal savings-income ratio. If, however, the prices are rising, this fall can be compensated partly or wholly by a tendency for the profits/ wages ratio to rise, due to the failure of wages to rise simultaneously with the increase in prices.

Under these circumstances, rising investment expenditure can be maintained only if the rising consumption of the wage and salary-earners could be satisfied. This increase in consumption under Indian conditions means mainly food. Increases in food availability are necessary to satisfy the rising demand for food, due to increasing money incomes, if a rising trend in investment is to be maintained.

Further, the rising investment expenditure, particularly with regard to the development of basic facilities and capital goods industries, necessitates increasing volume of imports of capital goods from abroad. Rising trend in investment thus can be maintained only if adequate foreign exchange resources become available.

Thus, the implementation of the Second Plan investment projects would mainly depend upon the availability of adequate food and foreign exchange resources.[1] However, right from the start of the Second Plan period, shortage of these two key resources became evident. Inadequacy of food availability was accentuated by the rising demand for food for the purposes of precautionary and speculative stock-building by producers, traders, and consumers.[2] The foreign exchange resources proved inadequate, and the foreign exchange reserves had to be used to an unexpected extent.

The shortage of foreign exchange resources has compelled the Planning Commission to restrict the size of the Second Plan to Rs. 6,200 crores at current prices. This means that in the last three years of the Plan period, assuming that the prices would not change, the investment expenditure would be about Rs. 2,562 crores at 1957-58 prices in the public sector and Rs. 1,184 crores at

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1. See D. R. Khatkhate's contribution elsewhere in this issue.

2. See S. Sachi, "Stock-Changes and Fluctuations in Food Prices", Economic Weekly, December 7, 1957.

1957-58 prices in the private sector.[3] Thus, the size of Second Plan investme during the last three years of the Plan period would be Rs. 3,746 crores at 195 58 prices; this investment at 1948-49 prices would be Rs. 3,582 crores, so tha now the total investment during the Second Plan period would be Rs. 5,924 cro at 1948-49 prices, instead of the expected investment of Rs. 5,970 crores at 19 49 prices. There would be thus hardly any substantial reduction in the size of real investment contemplated for the Second Plan period.

However, despite the fact that the size of real investment during the Sec Plan period would be more or less the same as was expected in the Second Plan, the expected physical output targets, according to the Commission's appraisal, would not be realized. The real income as well as output targets would not be f attained. Further, some very important industrial schemes, like the Heavy Ma chinery Project, the Heavy Electrical Project, Mining Machinery Project, and Fertilizers Factory at Rourekela, would be slowed down and would be completed only during the Third Plan period. In the private sector, too, the output targets for some capital goods industries would not be fully attained. At the end of the Second Plan period, shortages would develop with respect to power, transport, fertilizers, and possibly cement. The physical targets that are likely to be real ized are the outputs of steel, coal, some consumers' goods, heavy chemicals, l motives, electrical engineering goods, and possibly food.

This situation leads to the conclusion that the Commission underestimate capital requirements for realizing the Plan targets. The Commission had assum a capital-output ratio of 2.3:1; it appears now from the experience during the fir two years of the Second Plan period that this ratio would be a little higher than

The attainment of the physical Plan targets would be further adversely af ted by a possible reduction in the Second Plan size of real investment. The Com sion feels that, because of the shortage of internal resources, particularly food the public sector investment during the last three years of the Plan period may to be restricted to about Rs. 3,484 crores at 1957-58 prices, assuming that the prices do not change during these years. The total investment during the Plan pe iod in that case would be only Rs. 5,634 crores at 1948-49 prices, instead of th expected investment of Rs. 5,970 crores. The magnitude of real investment wou be even smaller if the prices rise during the last three years of the Plan period, a the Commission's estimates are in financial terms at current prices.

The study of India's planning experience so far leads to some important co clusions for the economic development of India, as well as other similar underdevel economies. Perhaps the most important conclusion is that the marginal propensity save at least in the initial stages of development may not rise appreciably abov average propensity to save. The rising trend of investment therefore can be su ported only if adequate food as well as foreign exchange resources become avai Further, with an investment pattern like that of the Indian Second Plan, the cap output ratio is likely to be a little higher than 3:1.

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3. Government of India, Planning Commission, Appraisal and Prospects of the Second Five Year Plan, Delhi, 1958.

4. See in this connection S. Sachi, "Basic Fallacy in the Planning Commis sion's Appraisal", Economic Weekly, May 17, 1958, pp. 676-677.

PATTERNS OF ENTREPRENEURSHIP IN SOUTH INDIA

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Introduction

Of the many shortages which impede the progress of underdeveloped countries, one of the most serious limiting factors on their economic development is the acute shortage of entrepreneurs. Economic development is, in the last analysis, the outcome of human decisions and activity. At the center of the process stands man: as organizer of the community's resources, as worker, and as user of the goods produced. Of these three roles, that of organizer of the factors of production is all-important. For, unless the resources and skills of society are organized in efficient production units, both capital and labor must remain largely unproductive, and the rate of development low.

Students of economic development, therefore, understandably desire to know more about this important figure, the industrial entrepreneur.[1] How are such men produced in a society which has little or no industry? From what social and economic groups do they come, and how do they make the transition to industry from previous activities? What are the sources of their initial capital? What attitude do they take toward industry once they have entered it--are they enterprising, imaginative, eager to grow and exploit new opportunities, or content to drift along in old accustomed ruts, indifferent to the development of the enterprises they have established, and unwilling to accept the risks involved in change?

Unfortunately, the empirical data required to answer these questions are, like the entrepreneurs themselves, extremely scarce. Moreover, since conditions vary so widely from country to country and even from region to region within some countries, the data required are such as can be gathered only by what Professor Gerschenkron has called "a great deal of patient monographic research."

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1. Economic development and industrialization are not, of course, synonymous terms. In practice, however, the underdeveloped countries of the world are placing great stress on industrialization in their development programs, thus giving the problem of industrial entrepreneurship, as distinct from other types, particular importance and urgency. In India, the government has assumed responsibility for the development of the country through a series of comprehensive Five Year Plans. Considerable scope has been left to the private sector of the economy, however. The Second Five Year Plan, now in progress, envisions investment by private industry of approximately 5 billion dollars, alongside the government's expenditure of 9.5 billion dollars. Unless capable entrepreneurs come forward in sufficient numbers, progress will be impeded and a greater burden than necessary placed on the government.

This article presents some findings of such a research project, carried out by the writer in South India from January to September 1957.[2]

The main object of the study was to obtain information on the questions listed above, and to study the problems of first-generation industrialists in a developing economy. Madras State in South India was selected for study because it is an area exhibiting the characteristics of the so-called underdeveloped area, namely, concentration on agriculture as the main source of livelihood, together with low productivity in agriculture; relative unimportance of factory industry as compared with handicraft and cottage industry; population pressure; and, as a consequence of these factors, low per capita incomes. At the same time, factory industry has been growing, particularly since the end of the Second World War, making it a suitable place for a study of emerging entrepreneurship.[3]

The study was limited to medium-scale manufacturing enterprises in the light-engineering industries. "Medium-scale" enterprises were defined as firms employing at least fifty but not more than two hundred and fifty persons. The lower limit was derived from the Government of India's definition of "small-scale" establishment as one (if using power) which employs less than fifty persons and whose capital assets do not exceed 500,000 rupees. The upper limit was decided by the fact that above two hundred and fifty employees there is a decided gap in the firms of the state, after which a group of firms appears employing three hundred and fifty to four hundred persons and upwards. In addition to their larger size, the latter are very different in character from their smaller counterparts, being either foreign-established or foreign-controlled enterprises or firms established by wealthy Indian businessmen, often in collaboration with foreign capital. An investigation of these firms would have required a study organized differently from the present one. One firm in the sample, however, forms an exception to what has just been said. It is a large-scale unit founded on a very modest scale by an Indian entrepreneur without foreign help, and during the first years of its existence different in no important respects from the other establishments investigated.

The light-engineering industries were singled out for investigation because of the important bearing they have on the future industrialization of any underdeveloped area. A glance at the list of industries included in the study, as shown in Table 1, is sufficient to indicate their importance. Since the writer was

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2. The research was carried out with the assistance of a grant under the 1956-57 International Student Exchange Program. The complete study has been accepted as a doctoral dissertation at Columbia University entitled "Entrepreneurship in Madras State, India", June 1958, microfilm. Cf. Dissertation Abstracts, Vol. XIX, No. 3, p. 467.

3. Madras State is the third most industrialized state in the Indian Union, but far behind the two leaders, Bombay and West Bengal. Average daily employment in factories in the three states during the first half of 1955 was as follows: Bombay, 830,017; West Bengal, 635,923; Madras, 332,571 (see Commerce Annual Review Number, Bombay, December 1956, p. A108a). Madras State comprises an area of 50,110 square miles in the southernmost part of India, with a population of approximately 30,000,000 persons.

Table 1. Distribution of Firms Investigated by Industry Groups

Industry	Number of firms
I. Producer-goods industries	
1. Agricultural machinery (rice-hullers, oil engines, power-driven pumps, etc.)	16
2. Steel fabricating and structural workshops	8
3. Electrical products	6
4. Textile machinery and spare parts	3
5. Rolling mills (steel and brass)	2
6. Rough and finished castings	2
7. Truck and bus body building	1
8. Miscellaneous	3
Total	41
II. Consumer-goods industries	
1. Household utensils	3
2. Radio receiving sets	3
3. Plastic buttons	2
4. Automobile accessories	1
5. Fountain pens	1
6. Bicycles	1
Total	11
Total, all firms	52

concerned with development of manufacturing industry, establishments engaged exclusively in repair work, such as bus and automobile repair shops, were excluded.

Fifty-nine medium-size enterprises operating in the light engineering-manufacturing field were discovered in the state, the great majority of them located in the vicinity of either Madras City, a major port city on India's east coast, or Coimbatore, an important textile center in the western part of the state. Adequate information was obtainable for fifty-two of them, or 86 percent.

The method of investigation used was the personal interview checked against information obtained from other sources. Firms were visited several times, and key employees, such as works-managers, were interviewed, as well as proprietors. Cross-checking of information received was facilitated by the fact that a complete enumeration of the firms within the scope of the study was aimed at. As the investigation proceeded, many cross-links and connections among firms were uncovered, making it possible to check information volunteered by proprietors against that obtained from relatives, former partners, former employees (particularly bookkeepers, among whom there is a very high rate of labor

turnover) and dealers who buy from or sell to the manufacturing enterprises. In underdeveloped areas such persons get to know a great deal about the firms with which they are associated, including their history and the family background of the owners. Old factory lists provided another means of control regarding initial size and subsequent growth of firms. The writer's main concern was to verify the general picture of each enterprise which gradually emerged as he moved around a given area: who really established it, what was his social and economic background, the initial size of the enterprise, whether it had been developed by the proprietor without outside help or by taking in partners, etc. Once established, this general picture served as a control over details, such as amount of initial investment and sources of capital which could not be verified directly.

Patterns of Entrepreneurship

The entrepreneurs encountered form a very varied group in terms of both economic and social background. Contrary to expectation, only a minority were discovered to be former merchants. Men of trading background, however, constitute the largest single occupational group, 28.8% of all firms having been established by men of that category. Another surprise was the fact that the second largest group (23%) consists of graduates of engineering college. Their presence indicates a higher quality of entrepreneurship than is generally supposed to exist in the medium-scale industry of the area. Six firms were established by former factory workmen, five by rural artisans, four by cultivators, four by men already established in some other line of manufacture, and six by entrepreneurs of various backgrounds, such as white collar workers, former teachers, and others.

Entrepreneurs have been drawn from ten different "social communities" using the term in its Indian sense.[4] Twenty-one firms were established by Naidus, twelve by Brahmans (including a partnership between two Brahmans and a Christian), eight by Chettiars (including a partnership between two Chettiars and a Naidu), three by Naickers, two by a Punjabi (the same individual), two by Christians, one of whom is a European permanently settled in India, and one each by a Gujerati, a Gounder, an Asari, and a Muslim.[5]

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4. For a discussion of the meaning of the term and the importance of the social community in the business life of India, see D. R. Gadgil et al., Some Notes on the Rise of Business Communities in India, New York, 1951, mimeographed, p. v. The term "community" in India denotes the group within which habitual inter-dining and inter-marriage takes place, and is the primary social group in Hindu society. Present-day communities are the outcome of a long process of sub-division of the four main castes of Hindu society, namely, the Brahmans (priestly caste), Kshatriyas (warriors), Vaisyas (traders), and Sudras (artisans). For a brief outline of the communities most important in the Indian business world, namely, the Parsees, Gujeratis, and Marwaris, see ibid., p. 6.

5. The Naidus were originally a Telegu-speaking warrior people from an area north of Madras, now part of Andhra State. They migrated south during the wars of the sixteenth and seventeenth (continued on next page)

The oldest firms in the sample were founded by men who were originally rural artisans engaged in odd-job and repair work in village areas. Table 2 indicates the age, size, and present activity of these firms.

Rural artisans constitute the largest single group among pre-World War II entrepreneurs. None are found among postwar entrepreneurs. It would not be correct to conclude, however, that rural artisans are a vanishing group of entrepreneurs in the industries studied. Their firms typically begin on a very small scale and are slow in growing to medium size. Many may have been established in recent years which had not yet grown sufficiently to be included in the present study. Of the artisans encountered, three were Naickers, one a Naidu, and one an Asari. Two were originally rural smiths, one the operator of a small workshop connected with some salt-pans owned by the family, and one a village odd-job and repair man who gradually came to specialize in the repair and finally the manufacture of irrigation equipment. Of the five enterprises established by these men, two now manufacture agricultural processing machinery such as rice-hullers and sugar crushers; two are structural workshops; and one a producer of power-driven pumps. All began on a very small scale with only a few workmen in addition to the owner and a few thousand rupees investment.

All the artisan-established firms have followed an essentially similar pattern of development. The enterprises came into existence originally as small odd-job and repair shops ancillary to agriculture or village industry. The turning point in their history came with the installation of a foundry by some enterprising member of the family, financed with family funds and small borrowings from other relatives. Once equipped with cupola and molding section and some sort of machine shop, the former repair shop can now develop into a full-fledged

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centuries, to settle down finally as cultivators in the area around Coimbatore. From general cultivation they turned to cotton-growing when the British began establishing textile mills in the area, and are now in control of most of the mills of the area. The Brahmans are the highest or sacerdotal class among the Hindus, whose chief duty traditionally was the study and teaching of the Vedas, and the performance of religious ceremonies. In modern times they have been prominent in education, the professions, and government service. The Chettiars are predominantly a trading community (although some groups of artisans are found among them). They are a southern counterpart of the Marwaris and have dominated trade in South India and Burma. The Naickers (or Nayagars) are an artisan caste in the eastern part of Madras State, whose traditional occupation is smithy and carpentry work, from which they moved into foundry work. Punjabis are inhabitants of the Punjab in North India. Gujeratis are inhabitants of Gujerat, an area north of Bombay. They have long been prominent in trading and other business in Bombay and Ahmedabad. The Gounders are a cultivating caste in the vicinity of Coimbatore. The Asaris are an artisan caste in the western part of Madras State and are very similar to the Naickers. The Muslims are Mohammedans and are prominent in the leather and tanning industry of the state. For detailed information concerning the history and social customs of these and other communities in the area, cf. Edgar Thurston, Castes and Tribes of Southern India, 6 vols., Madras, 1909, passim.

Table 2. Firms Established by Rural Artisans

Year established	Employment[a] First year	Employment[a] 1956	Investment (Rs.)[b] Initial	Investment (Rs.)[b] End of 1956	Main product or activity
1884	n.a.[c]	72	n.a.	165,000	Rice-hullers
1916	n.a.	52	n.a.	146,000	Rice-hullers
1921	n.a.	55	n.a.	170,000	Structural shapes
1924	n.a.	218	n.a.	1,092,000	Power-driven pumps
1944[d]	5	124	n.a.	110,000	Structural shapes and steel windows

a. Average number of persons employed daily in addition to proprietors.

b. Includes both fixed and working capital. One rupee = approximately US$0.21.

c. Actual figures pertaining to initial size were not available for most pre-World War II firms. It is certain, however, that all these firms began as small repair shops with a few workers and very small initial investment.

d. The year of establishment of this firm in its original form as a small rural work-shop was not ascertainable. It was inherited by its present owner, the son of the founder, in 1944 and at that time employed five hired workers.

manufacturing establishment. The typical development has been through production of spare parts for agricultural machinery, such as rice-hullers and irrigation pumps, to manufacture of entire machines. Subsequent diversification has carried two of the enterprises into the structural field.

Firms of the present type are usually family-controlled and financed. Only one of them made the transition from repair and odd-job work to manufacture proper with substantial help from outside capital, obtained by taking in two non-relatives as partners. The partnership was short-lived due to "misunderstandings" which soon developed, but served the purpose of providing the finance necessary for expansion of the enterprise.

A more recent counterpart of the rural artisan entrepreneur is the workman who works for some years in one or more factories of the area and then leaves his employment to establish a small workshop of his own, often in partnership with another workman or some wealthier relative "with capital". Six firms in the sample came into existence in this way (see Table 3).

Five of these firms were founded by Naidus and the sixth by two Gounder brothers. The writer was able to verify that all these workmen are the genuine entrepreneurs of the firms in question, as distinguished from so-called "working partners" sometimes taken by merchants and other businessmen when organizing a manufacturing enterprise but who are little more than employees of the latter. The point is of importance if anything is to be concluded about the possibility of an ordinary workman's becoming a medium-scale industrialist in present-day India.

Table 3. Firms Established by Former Factory-Workmen

Year established	Employment: First year	Employment: 1956	Investment (Rs.): Initial	Investment (Rs.): End of 1956	Main product or activity
1942	6	72	7,500	308,000	Power-driven pumps
1944	12	118	30,000	437,000	Power-driven pumps
1949	2	75	4,000	92,000	Pulleys; pumps
1951	16	80	20,000	105,000	Structural shapes
1955	22	52	60,000	97,000	Power-driven pumps
1956	35	51[a]	60,000	110,000	Misc. machinery parts

a. Number employed at time of visit, June 1957.

See notes for Table 2.

The general pattern of development of workmen-established enterprises closely resembles that of firms established by rural artisans. All the entrepreneurs in question came originally from rural villages and as young men went off to work in a factory near the city. After ten or fifteen years of such employment (during which time one rose to the rank of foreman), usually in several different factories, they left to set up workshops of their own. In all cases these shops were established originally on a small scale as repair and odd-job shops in a line of work related to the workman's former employment.

Sources of initial finance were reported as savings accumulated over the years of employment plus borrowing from friends and relatives. Three of the six were established as partnerships, and a fourth, after struggling along on a very small scale for some years, raised the capital necessary to make the transition from repair to manufacture by taking in two partners. The partnership soon foundered on "misunderstandings", and the original owner withdrew to establish a second enterprise in the same line of manufacture, production of power-driven pumps. As in the case of artisan-established enterprises, typical development has been from repair work to manufacture, first of parts and then of entire machines.

The phenomenon of "temporary partnerships" appears to be quite common on the level of industry with which we are dealing. One reason is that partnerships are often formed between a "working partner" who knows the technical side of the operations, and a "financial partner", a relative or non-relative, who supplies the capital. The latter usually has the greater business experience and handles the financial side of the new enterprise. The arrangement is usually satisfactory while the firm is very small, but when it grows larger, with greater sums of money involved, the working partner often begins to feel handicapped by his lack of financial and accounting knowledge, and suspicions easily develop. Another source of potential conflict, encountered a number of times in the course of the study, is the fact that the working partner is usually interested in expanding

the business and in developing it technologically, while the financial partner, being less familiar with the ways and risks of industry, is often more interested in quick returns on his money. Entrepreneurs themselves distinguish between an "industrialist" and a "businessman", the criterion being whether a man "puts in" or "takes out" of the business. The outcome of these strains and tensions is usually the dissolution of the partnership after a few years. Even though partnerships may be short-lived arrangements, they serve a distinct role in the development of small enterprises handicapped by lack of capital. Through such a partnership one of the artisan-established firms was able to reorganize to take advantage of an expanding market and thus "get over the hump" in its progress from the small to the medium-size category. The profits thus realized led in turn to the founding of another firm when the partnership broke up and a settlement was made. If the partners had attempted to develop their original small shops separately, both would probably be much smaller today than the existing enterprises.

As mentioned earlier, merchants form the largest single group of entrepreneurs encountered. Ten of the firms studied were established by merchants engaged in domestic trade, and five by importers. Merchant-entrepreneurs represent six social communities, although Chettiars (six firms) and Brahmans (four firms) account for two-thirds of merchant-established enterprises. The remaining five owe their existence to a Gujerati, a Muslim, a Christian, and a Punjabi (two firms). The fifteen firms cover a wide range of industry, as seen in Table 4.

What leads the merchant to venture into the new and unfamiliar field of manufacturing industry, and how does he decide on the particular industry he will enter? The profit motive supplies the answer to the first question, and the merchant's trading activities are an important factor in deciding the answer to the second. In thirteen of the fifteen cases under consideration, a discernible relationship exists between the new manufacturing activity and the merchant's trading activities, the former being a more or less logical outcome of the latter. Thus the proprietor and founder of the first firm listed in Table 4, a flourishing structural workshop, began his business career as a dealer in spare parts for rice-hullers as an adjunct to the traditional family business of rice-milling. In time he found it profitable to establish his own foundry, first for the manufacture of spare parts and later of complete rice-hullers. Gradual diversification over the years eventually carried the enterprise into the structural field, now its main line, with miscellaneous machinery parts as a secondary activity. The manufacturer of enamel-ware utensils originally dealt in such products as the agent of a Calcutta firm. When the firm failed in the early thirties, he formed a partnership with its chief technician to set up a small enamel-war plant in South India, the first of its kind in the area. The fourth firm in Table 4 was purchased by a scrap metal dealer, when it failed in 1940, with a view to selling the machinery and other equipment. This man, however, decided to operate it "for one year" as a speculative venture, made profits due to the War demand for engineering goods, and when he died in 1950 left the firm to his son who still operates it. The same man also established the steel rolling mill as an adjunct to his scrap-trading business. Examples of similar close relationships between merchants' trading and manufacturing activities could be multiplied. The relationship is perhaps clearest in the case of the importers, all of whom have entered the field of manufacture in order to produce goods formerly imported but now unobtainable in sufficient quantities because of import quotas, or because they

Table 4. Firms Established by Domestic Merchants and Importers

Year established	Employment: First year	Employment: 1956	Investment (Rs.): Initial	Investment (Rs.): End of 1956	Main product or activity
A. Domestic merchants					
1922	20	144	45,000	300,000	Structure shapes, machinery parts
1923	n.a.	67	30,000	228,000	Rice-hullers
1934	12	122	11,000	654,000	Enamel-ware utensils
1940[a]	79	68	n.a.	225,000	Misc. machinery and parts
1941	n.a.	53	65,000	147,000	Steel rolling mill
1945	10	51	60,000	405,000	Rice-hullers
1946	17	54	65,000	115,000	Brass foundry and rolling mill
1947	25	100	115,000	324,000	Textile machinery; electric motors
1949	25	103	30,000	77,000	Brass utensils
1952	27	51	40,000	138,000	Automobile accessories
B. Importers					
1952	n.a.	65	n.a.	222,000	Radios
1952	57	200	500,000	819,000	Radios
1953	19	77	100,000	n.a.	Bicycles
1953	25	65	175,000	281,000	Electrical equipment
1955[b]	n.a.	60	n.a.	n.a.	Electrical equipment

a. Not founded by the present proprietor but purchased by him in liquidation proceedings and put back into operation in 1940.

b. Exists as an integral part of a larger unit; separate investment figures not available.

Cf. notes to Table 2.

realize that reliance on importing alone is now a risky venture because of the government's determination to develop Indian manufacturing industry.

In only two cases no logical connection is discernible between the merchant's manufacturing and trading activities, and these appear to be the result of rather fortuitous circumstances. The sixth firm in Table 4, a producer of rice-hullers, was established by a dealer in plaintains (a type of banana). After being called in by relative to arbitrate the settlement of a family estate which included a small foundry engaged in the manufacture of rice-hullers, he entered

into partnership with one of the beneficiaries to start a similar enterprise. In time he bought out the partner and is now sole owner. The second firm in the list, also a producer of rice-hullers, was started by a dealer in cloth and agricultural products in order to take advantage of the services of his son when the latter graduated as a mechanical engineer. On the death of his father, this son withdrew from the active management of the original enterprise, which still exists, to start a similar firm of his own. He has continued as a silent partner in the original firm.

The enterprises launched by merchant-entrepreneurs differ in a number of respects from those established by artisans and workmen. They have not usually begun as repair and odd-job shops, but have been established as manufacturing units complete with foundry. The reason is doubtless because the merchant has a greater amount of capital at his disposal than his humbler counterparts and easier access to credit because of his established business connections. Available data indicate that initial average investment by domestic merchants was approximately Rs. 50,000 and by importers approximately Rs. 250,000. Firms established by domestic merchants employed an average of 27 workers during the first year of operation, importer-established firms 34 workers. Average initial size of enterprises established by artisans and workmen is somewhat less than half that of domestic merchants' firms, in terms of both capital and first year's employment, and many of them began with five or six workers and a few thousand rupees investment.

Does the merchant, once he has entered the field of manufacture, abandon his former trading activities or maintain them alongside his new enterprise? Of the ten merchants engaged in domestic trade, five have maintained their older trading firms alongside the new business and divide their time between the two. Four of them use the trading firm as the marketing outlet for their manufactured products. The exception is the plaintain dealer referred to above, who has not found his trading organization suitable for the marketing of engineering goods. The remaining five have withdrawn from trading as a separate business and are now devoting themselves exclusively to manufacturing industry. One of them, however, a scrap metal dealer, maintained his trading business until his death, at which time a division of the estate resulted in the separation of trading and manufacturing enterprises. Among the importers, four of the five have continued their importing business, and for three of them importing still overshadows manufacture in importance. At least two give the distinct impression of being "reluctant industrialists", more or less forced into manufacture by circumstances beyond their control. The fifth importer, however, a manufacturer of fountain pens, is one of the most enthusiastic industrialists encountered. He has liquidated his trading firm in order to devote all his time to building up the manufacturing enterprise, and at the time of the writer's visits was building a new plant with double the capacity of the old one.

One of the most interesting types of entrepreneur encountered in the course of the investigation is the graduate engineer who has entered industry. The writer embarked on the investigation expecting to find that most of the firms had been organized by merchants or manufacturing firms already in existence. It was a surprise, accordingly, to find the second largest group of entrepreneurs composed of graduates of engineering college, most of them young, and nearly half in possession of foreign (usually British) engineering degrees. Twelve firms, or nearly twenty-five percent of the sample, were established by men of

this type. Two were founded in the latter thirties, two during the War, and the rest since 1945. Many industries are represented, as the following table indicates.

Table 5. Firms Established by Graduate Engineers

Year established	Employment: First year	Employment: 1956	Investment (Rs.): Initial	Investment (Rs.): End of 1956	Main product or activity
1935	n.a.	100	n.a.	175,000	Structural shapes
1939	18	53	11,000	110,000	Rice-hullers
1941	6	82	4,500	319,000	Rough castings for machinery parts
1942	3	72	6,500	172,000	Misc. agricultural processing machinery
1945	10	80	60,000	405,000	Structural shapes, tractor trailers
1946	20	4434	n.a.	6,072,000	Textile machinery; oil engines
1946[a]	20	248	n.a.	n.a.	Textile and misc. machinery
1947	44	412	n.a.	n.a.	Electric motors
1948	11	57	20,000	145,000	Non-ferrous castings
1949	12	56	40,000	152,000	Radios
1949	10	79	60,000	198,000	Power-driven pumps
1957	53	53	100,000	129,000	Electric motors

a. Exists as an integral part of a larger unit; separate investment figures not available.

Cf. notes to Table 2.

The social background of the engineer-entrepreneurs is quite varied. Five are Brahmans, five Naidus, one a Chettiar, and one firm was established as a partnership between two Brahmans and a Christian. Of those whose father's occupation could be ascertained, two are the sons of government officials, two the sons of merchants, four the sons of landlord-cultivators, one the son of a doctor, one the son of a textile mill owner, one the son of an engineer, and one the son of an ordinary workman. As a group it is clear that they come from upper middle-class or well-to-do families. Most have been helped by their families in setting up their enterprises, although two reported some opposition from the family on the grounds that industry was not in keeping with the "family tradition". It is interesting to note the high proportion of members of the Brahman community among the present group of entrepreneurs. Nearly half of the firms have been established by Brahmans, and these men, in turn, represent nearly half of all Brahman

entrepreneurs encountered. Entrance into manufacturing industry is at a wide remove from traditional Brahman activity, which in modern times has been mainly in the fields of education, government service, and the professions. There is an evident awareness among members of the community that "times are changing", however, and that industry is becoming a field of increasing opportunity for their sons. There also exists a feeling on the part of South India Brahmans that their community is to some extent being discriminated against in their traditional spheres of activity. There is no doubt that during British times the Brahman community was favored in certain respects, particularly in the matter of government service, and it appears that with independence a reaction set in, particularly in South India. Be this as it may, many Brahmans feel that it is true, and several of the entrepreneurs encountered mentioned it as a reason for entering industry. Only one Brahman entrepreneur reported that members of his community disapproved the move as alien to the community's traditions. It is also noteworthy that several of the largest and most important engineering firms in Madras City are Brahman-controlled.

Financial help provided by the family has been the main source of initial capital for the engineer-entrepreneurs. At least one was set up in business by his father (a cloth merchant and former master weaver) "because he had no ancestral lands to leave his son". The enterprise is the son's sole proprietorship. Two firms in the present category, however, began as partnerships composed of several engineers, financed out of personal savings of the entrepreneurs supplemented by borrowed funds. Another was set up with the owner's share in the family estate, and one is a second enterprise established with profits made in an older engineering-manufacturing firm. The engineers have launched their enterprises on a scale slightly smaller than the domestic merchants. Initial investment has averaged approximately Rs. 40,000, with an average of 18 persons employed during the first year.

Dependence on family finance sometimes raises problems analogous to those which arise between "working" and "financial" partners. As a group, the engineers are intensely interested in developing their enterprises and in raising technological standards. One reported constant arguments with his three cultivator brothers, who as co-owners must be consulted on all long-range policies. The engineer wants to plow back all earnings and steadily expand operations. His brothers are much more conservative and worry a great deal about the risks involved in future growth. Another is dependent on his father and older brother, the owners of a textile mill, for expansion capital for his machinery producing plant. They are apparently more used to the quick turnover characteristic of textile manufacture in which you "can buy cotton today and have yarn tomorrow" and are reluctant to tie up large sums in heavy equipment needed for machinery manufacture. At the same time, they will not allow the engineer son to seek outside capital lest his enterprise fail and damage the family credit-rating.

Engineering-manufacturing industry has not yet attracted to any significant extent manufacturers already established in other lines of industry. Only four firms in the sample owe their existence to such entrepreneurs. Two of them were established by Naidus, one by a Chettiar, and the fourth is a partnership between two Naidus and a Chettiar. Table 6 gives additional information regarding these four firms.

At first sight there appears to be little connection between these manufacturers' old and new activities. The plant producing well-boring equipment was

Table 6. Firms Established by Manufacturers

Year established	Employment: First year	Employment: 1956	Investment (Rs.): Initial	Investment (Rs.): End of 1956	Main product or activity
1947	9	53	15,000	109,000	Well-boring equipment
1947	27	65	150,000	625,000	Stainless steel utensils
1949	60	150	100,000	533,000	Nut and plastic buttons
1956	20	60	75,000	110,000	Power-driven pumps

Cf. notes to Table 2.

established by the owners of a textile mill, the stainless steel utensils plant by a jewelry manufacturer, the button factory by the owners of a pump-producing establishment, and the pump factory by two brothers who recently liquidated an unprofitable weaving factory. In the first two cases, however, there is a closer relationship than appears on the surface.

The well-boring machinery plant was originally established by the textile mill owners to produce doubling frames for their textile mill, the manufacture of well-borers being added as a second line to make use of excess foundry capacity. With the spread of irrigation in the area, the latter became so profitable that it has become the firm's main activity, production of doubling frames now being a minor sideline. The utensils manufacturing plant was originally established by the jeweler as a second silver working shop, manufacture of stainless steel utensils being added later. The latter is a more or less logical development of the owner's cutlery manufacture, a line which was added by his father around the time of the first world war. Cutlery manufacture was the family's first departure from the pure craft tradition, since some machines were used in the process. The present proprietor is being carried much farther away from the family's jewelry-craft tradition. Severe competition from two large utensils makers in the area has prevented him from using his new plant to full capacity and has forced him to take on ancillary production for a railway coach factory. Approximately half the output of his plant now consists of railway couplings, aluminum water tanks, and other railway coach accessories. Thus are would-be industrialists sometimes carried into lines of activity not originally envisioned by them.

All four manufacturer-entrepreneurs relied heavily on earnings of their older enterprise or, in the case of the weaving plant, on the sale of old machinery, for a substantial part of the funds required to set up the new plant. In addition, one was able to secure bank financing, and another a loan from the state government, for expansion and relocation of his plant a few years after establishment. After importer-established enterprises, these firms began life on the largest scale of any category. Average initial investment was approximately Rs. 85,000, with 29 persons employed on the average during the first year.

The last ten firms under study were established by men of miscellaneous backgrounds who do not fit conveniently into any of the occupational groups discussed thus far. These are shown in Table 7.

Table 7. Firms Established by Entrepreneurs of Miscellaneous Backgrounds

Year established	Employment: First year	Employment: 1956	Investment (Rs.): Initial	Investment (Rs.): End of 1956	Main product or activity
1926	n.a.	89	n.a.	187,000	Power-driven pumps
1935	n.a.	87	12,000	125,000	Truck and bus body-buil
1939	29	90	n.a.	405,000	Electric motors
1946	70	250	35,000	587,000	Nut and plastic buttons
1947	18	114	45,000	228,000	Textile machinery parts; switch-gears
1949	9	52	27,000	75,000	Tar boilers
1951	3	53	5,000	109,000	Structural shapes; carts trailers
1951	27	58	25,000	89,000	Power-driven pumps
1956	30	75	65,000	135,000	Structural shapes
1956	n.a.[a]	60	n.a.	n.a.	Radios

a. Exists as an integral part of a larger unit; separate investment figures not available.

Cf. notes to Table 2.

Four of these firms were established by land-owning cultivator families or as individual enterprises of the sons of such families, with assistance of the family and other relatives and friends. Of these, three began life as small sho for the repair of agricultural machinery, and the fourth as a producer of agricultural implements. All have diversified their activities considerably since establishment.

The remaining entrepreneurs exhibit very varied backgrounds. One wa originally a teacher who by dint of much frugal living eventually saved enough t purchase a second-hand bus which he put into operation over a route near the school. By plowing back all earnings and with the help of borrowings from friends and relatives, he eventually built up a fleet of busses which became an important link in the local transportation system. His present firm, a bus and truck body-building plant, developed out of the repair shop originally set up to service the busses. It was continued as a separate enterprise when the bus lin was finally sold to the city.

Another entrepreneur in the present group is also a bus line operator who has used his profits to set up an electric motor manufacturing plant and, more recently, a small factory for the manufacture of radios. Unlike the form entrepreneur, this man has continued in the motor transport business despite h new manufacturing activities.

The founder of one of the structural workshops is a former salesman for a large contracting firm in the construction industry. After working for this company for a few years, he tried his own hand at contracting, did not succeed, and then went into partnership with his brother to set up a small structural workshop.

The button factory was established by the only European encountered among the entrepreneurs studied. This man came to India in the 1930's as the representative of a large European shoe firm. He left that position shortly before World War II to set up a small button factory in partnership with some European friends and Muslim businessmen in Lahore, now located in Pakistan. Technical assistance was provided by European acquaintances in the button industry. Wartime demand for buttons for army uniforms put the business on its feet immediately, and it expanded rapidly. The chief raw material, dum nuts from Africa, soon became unavailable because of the shortage of shipping during the war, and the firm was forced to substitute the use of palm seeds from Malabar (on India's southwest coast) and latter coconut shells from the same area. A processing plant was set up in Cochin to prepare the shells for shipment to the north. After the war the entrepreneur withdrew from the Lahore partnership, took over the Cochin plant as his share of the settlement, moved it inland to a new location "in order to escape the tough atmosphere of the port city", and thus became one of the industrial pioneers of Madras State. Until his arrival there was no button factory in the South, and buttons were little used in the area, the traditional fastener being the wooden stud, produced on a cottage basis. The market for buttons has expanded steadily since the new plant went into operation, and several others have been established by imitators. This firm is steadily withdrawing from nut button production in favor of plastic varieties. The result of the change has been a host of problems arising out of the need to import and service the latest type European presses and other machinery, and great industrial unrest due to reduction of the workforce.

The last firm in the sample, a producer of tar boilers for road-building machines, is unique in that it was financed, but is not owned, by a large engineering-trading company with branches in many parts of India. Shortly after the war, this firm began manufacturing tar-burners in India, formerly imported from abroad. Constant labor trouble, which has been increasing in recent years, finally caused the firm to shut down its own production unit and adopt a policy of setting up small independent suppliers instead. Four such units have been financed by the company, which supplies the machinery and technical assistance allowing the small owner to repay gradually on easy terms. The proprietor of the present firm, formerly a technician in a textile mill, was set up as a tar boiler manufacturer in this way. Both parties are well satisfied with the arrangement. The large firm has been relieved of the headaches of manufacture and industrial unrest and receives its boilers at a price considerably lower than the former imported cost. The former mill technician has already paid back most of the Rs. 27,000 worth of machinery advanced by the company and is now a small independent industrialist owning his own plant.

The most striking point which emerges from the preceding discussion is the extremely varied background of the entrepreneurs under study. It is evident that entry into industry is open to persons of very different social standing and economic position. This finding is somewhat unexpected in one of the less developed regions of a country where traditional occupation and caste play an important

part in determining economic status and are generally supposed to be the mai factors inhibiting the emergence of entrepreneurs. The findings suggest that t emergence of industrial entrepreneurs in modern India is more directly condi- tioned by economic rather than by purely social factors. Access to capital, po session of business experience, and technical knowledge--the usual determina in other countries--appear to be more important than caste, tradition, and ap- proval and disapproval of the social group. The prevailing social structure, h ever, obviously has a profound influence in determining who amasses capital a obtains business and technical knowledge. The careers of some of the workme entrepreneurs illustrate how growth of industry itself loosens the social fabric and leads to wider opportunities. The appearance of the first factories in the area enabled these men to leave their village occupations and eventually make the transition to the status of industrialists although members of cultivator cas The Brahman-entrepreneurs represent perhaps the sharpest break with the pas since teaching and the professions, rather than business and much less industr have been their traditional spheres of activity. On the other hand, shift into in- dustry has perhaps been facilitated for them by the fact that they have never be rigidly tied, at least in modern times, to one particular form of activity, as ha the artisan and cultivator castes.

Another unexpected finding is the fact that only a minority of the entrep neurs have had a trading background. The opinion is widespread in India that merchants, being men in possession of capital, have established most of the medium-scale industrial units which have appeared since the war. If that is tr elsewhere in India, it is not true of the area studied, at least as far as the eng nee.ing industry is concerned. Only fifteen, or less than one-third of the firm investigated, were founded by merchants engaged in domestic trade or by impo ters. These men constitute the largest single occupational group encountered, however.

In this respect the region studied conforms to what is known of the orig of industrial enterprise elsewhere in the world. It is now known, contrary to a view long held, that the medieval and early modern European merchant is by n means the sole ancestor of the modern industrialist. On the contrary, all impo tant occupational groups have contributed entrepreneurial talent to industrial development.[6]

A similar pattern of entrepreneurship has been observed in the early de velopment of the iron industry in South Wales. As long as the industry was sm local landlords and artisans predominated. Of seven persons who are known t have held entrepreneurial positions in the Welsh iron industry in 1723, four we landowners, one a merchant, and two ironmasters. As the industry developed merchants from the old commercial centers were attracted to it. Of twenty-fi

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6. Fritz Redlich, "Entrepreneurship in the Initial Stages of Industrializati Weltwirtschaftliches Archiv, Band 75, Heft 2, p. 65. He points out, ho ever, that no other single occupational group had as large a share as th merchants in the modern industrialist's ancestry. The proposition is d onstrated for Germany, pp. 65-71. Redlich thinks it probable that cra men were the second most important group prior to World War I, inclu in the term "new-line craftsmen" such as mechanics, electricians, etc. well as "old-line craftsmen" such as weavers, dyers, locksmiths, etc.

persons in entrepreneurial positions in 1788, nine were merchants, thirteen ironmasters, two entrepreneurs in other industries, and one a manager in an iron works. The occupational pattern found in 1788 remained fairly stable throughout the rest of the eighteenth and first half of the nineteenth century. Half of the entrepreneurs during that period were merchants, while the rest started as engineers, small masters, or managers in the iron industry or related industries such as copper, brass, tin plate manufacture, or engineering.[7]

These findings, in conjunction with those of the present study, suggest that in the very early stage of industrial development, the entrepreneurial function in the engineering industries is performed mainly by local persons of widely varied backgrounds, including landlords, artisans, and other occupational groups. Merchants apparently begin to play an important role only at a later stage of development. The constitute a "second wave" of entrepreneurs, attracted to the industry by the early successes of the pioneers.

Entrepreneurship appears to be developing according to this pattern in the engineering industry of South India. While the background of entrepreneurs has thus far been extremely varied, domestic merchants and importers have been assuming an increasingly important role in more recent years. Not only have more persons of trading background been entering the industry; they tend to start their enterprises on a larger scale than other entrepreneurs, a fact which is particularly characteristic of importers. Hoselitz points out that it was only when merchants were attracted to the Welsh iron industry that the industry started on its period of rapid growth.[8] Present findings suggest that the light engineering industry of Madras State may be on the threshold of such a "take-off point".

It is interesting to speculate how the influx of a large number of merchants, if it should develop, will affect the pattern of entrepreneurship in the future. It seems probable that such a development will make it increasingly difficult to launch an enterprise on a financial and technical shoe-string. New enterprises will have to compete with the larger, better equipped establishments owned by men in possession of considerable amounts of capital, which will make it harder for the small artisans and ex-factory workman to break into the ranks of the industrial entrepreneurs. It is to be expected, accordingly, that the freedom of entry which has characterized the industry thus far will diminish as time goes on.

In view of the present ease of entry coupled with rising demand for the products of these industries, it is somewhat surprising that no more merchants are found among the entrepreneurs encountered. Merchants are men traditionally on the lookout for profitable business opportunities. In particular, why have not more dealers in machinery and other engineering goods entered the field of manufacture, thus paralleling developments in other branches of Indian industry to a closer extent? The reason appears to be that this branch of commerce in India is dominated by large firms, many of them originally foreign-established, doing

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7. Bert F. Hoselitz, "Entrepreneurship and Capital Formation in France and Britain since 1700", in Capital Formation and Economic Growth, p. 324. The data are from an unpublished paper, "The Geographical and Occupational Origin of South Wales Iron-masters, 1717-1839", by Marshall Kolin.

8. Hoselitz, op. cit., p. 324.

widespread business throughout the country. These firms, moreover, have tr ditionally been importers of foreign-made engineering goods, although many o them now deal in Indian-made machinery and parts as well. They would have t enter manufacturing on a large scale if they were to find the venture profitable commensurate with their present scale of trading activities, and are unwilling t do that, judging from conversations which the writer had with representatives o four large trading companies operating in South India. The experience of thes firms lies wholly in the field of importing and trading, activities in which they been long engaged, and manufacture is viewed as an unfamiliar and risky ventu Two main reasons were given for the reluctance to begin manufacturing: the te nical difficulties of producing high-quality engineering goods within the country and the uncertain labor situation. A different pattern of trading in the engineer field might have attracted a higher percentage of merchants into manufacturing, thus making for a less varied pattern of entrepreneurship than was in fact encou tered.

A third interesting point which emerges is that entry into any particular industry is open to men of very different business experience and technical back ground. Merchants, former factory workmen, highly trained engineers, and white collar workers are found side by side in several of the industries studied. Conversely, entrepreneurs of similar background show considerable versatility with regard to the industries they have entered. These facts are brought out in the following table.

Table 8. Distribution of Entrepreneurs by Industry Groups
(Number of Enterprises)

Entrepreneurial Category	Industry Group: Agri-cul. Mach.	Struc-turals	Tex-tile Mach.	Elec-tri-cals	Misc. Produ-cers Goods	Con-sumer Goods	Total
Rural artisans	3	2					5
Domestic merchants and importers	3	1	1	2	3	5	15
Former factory workmen	3	1			2		6
Engineers	3	2	2	2	2	1	12
Manufacturers	2					2	4
Miscellaneous	2	2		2	2	2	10
Totals	16	8	3	6	9	10	52

There is little tendency for entrepreneurs of similar background to entr particular industries, except for rural artisans, who have congregated in the ag cultural machinery and structural industries, and merchants, one-third of whom have entered consumer goods industries.

The most versatile of the entrepreneurs encountered are the merchants and the engineers. Each of these groups has at least one representative in each industry category. So far as the merchants are concerned, this versatility is probably explained by the fact that they possess wider business experience than others and consequently greater skill in detecting opportunities for profitable business ventures, as well as capital to exploit them. As regards the engineers, the range of possibilities open to them is much greater, because of their technical training, than those open to a former factory workman, for example, who knows only one line of work.

The very "democratic" aspect of entry into the engineering field which the data reveal calls for some explanation, since it is said to be not characteristic of most branches of Indian industry. The general tendency has been for entrepreneurs in a particular industry to come from a similar economic and social background.[9] Thus the silk weaving industry in Bombay is in the hands of men who were traditionally silk merchants, the only exceptions being a few tailors who managed to accumulate enough capital to start a weaving establishment.[10] In the Coimbatore area, the Naidu textile mill owners have come from the ranks of cotton growers and merchants. Why, then, is entry into the engineering-manufacturing field open to entrepreneurs of such varied background and with such very different amounts of capital at their disposal? The main reasons are the following: (1) it is possible for an entrepreneur to enter an engineering industry on a very small scale. Of the fifty-two firms studied, fourty-four began as small-scale enterprises as defined earlier. Of these forty-four units, thirty-four employed fewer than twenty-five workers during their first year of operation, and eighteen fewer than fifteen workers. In terms of initial capital, only six of the fifty-two firms began with Rs. 100,000 or more; eleven with capital of Rs. 50,000 to Rs. 99,999; twelve with Rs. 25,000 to 49,999; and at least thirteen with less than Rs. 25,000.[11] The case studies reveal that many of these firms began as very small repair and odd-job shops. (2) Growth of small engineering workshops can take place gradually and by small increments. Machines such as lathes, drills, planing machines, and similar equipment can be added one by one as capital becomes available out of earnings or from small borrowings from relatives and frields. Thus the enterprise can grow without the entrepreneur having a large amount of capital at his disposal at any one time, and it becomes possible for a very small shop to develop into a medium-scale manufacturing enterprise from extremely humble beginnings. (3) Surprising as it may seem, it is not necessary that an entrepreneur in the engineering field be personally in possession of skill, training, or experience in engineering. Thirty-one of the firms studied were established by men with such training or experience, but some of the remaining twenty-one are among the most

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9. The authority for this statement is a study soon to be published, The Rise of Modern Industry in India, by D. R. Gadgil and M. V. Namjoshi of the Gokhale Institute of Politics and Economics, Poona, India. The writer had the opportunity of discussing the point in question with Dr. Namjoshi.

10. Ibid.

11. To these last thirteen firms should be added at least five of the ten prewar firms for which actual figures of initial investment were not available but which began on a very small scale.

successful and prosperous in the sample. Among the latter are firms establis by merchants with no personal experience in the engineering field. In general, however, because of the shortage of qualified technicians in underdeveloped cou tries, it is an advantage for an entrepreneur to be skilled in some branch of eng neering. Good technicians are difficult to find and hard to retain, particularly by small firms. On the other hand, an entrepreneur without personal technical qualifications who succeeds in hiring a capable technician may have great adva tages over an artisan or former workman who insists on doing his own enginee and who may be inclined to overestimate the value of his "practical engineering" training. (4) In an underdeveloped country, buyers, generally speaking, are no quality-conscious, nor in a position to judge the relative merits of different ma facturers' products. A small producer with little technical competence can thus succeed in marketing his product, even during the period when he is acquiring e perience and skill in manufacture. As a result, a smaller amount of initial cap tal is needed than would be required if it were first necessary to develop a high quality product before beginning production on a commercial scale. It is obviou however, that this situation will change as economic development gathers mome tum. There are numerous indications that quality-consciousness on the part of buyers is increasing in the area studied. This development has aggravated the technical problems of entrepreneurs and can be expected to make entry into the field more difficult as time goes on.

The surprising amount of freedom of entry discovered suggests that the light engineering-manufacturing industries are a particularly fruitful source of t industrial entrepreneurs so badly needed in underdeveloped countries. These in dustries should perhaps be viewed as a kind of "school of entrepreneurship" whe entrance requirements are not stringent, and in which merchants, cultivators, factory workers, and other aspiring industrialists can make the transition to ind try more easily than in other sectors of the economy. This fact gives the indust in question, in the opinion of the present writer, an importance far in excess of their immediate contribution to industrial output and employment. Besides bein a source of the smaller engineering goods, such as pumps, motors, oil engines, small machine tools, etc., which can profitably be produced within the country, thus freeing foreign exchange for heavier equipment, they are also a strategic training-ground for first-generation entrepreneurs, whose efforts to get firmly established and grow should be assisted in every possible way.

THE IMPACT OF INFLATION ON INDIA'S ECONOMIC DEVELOPMENT

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Any underdeveloped economy has to bear an impact of inflation during its economic development, especially when the process of growth happens to be at a rapid pace. In fact, the risk of inflation is, up to a point, inherent in the very process. The level of investment required to break through the vicious circle of low income-low savings has to be on a large scale, and it is not always possible to meet that investment expenditure from taxation and current savings of the community alone. A certain amount of credit creation to finance the investment activity thus becomes nearly inevitable, and the resulting frictions and pressures get reflected on the general and sectoral price levels, though the degree of their impact varies in different sectors, as for example, in investment and consumption goods sectors and within the latter with respect to some particular commodities.

However, it is imperative to realize that the impact of inflationary pressure is rather ineluctable, even in a situation where the extent of investment expenditure has been limited to the currently available savings. The rate of capital formation, if it is to become self-cumulative and outstrip the rate of population growth, has to be on a large scale. This means that switchover of current output to investment has to be substantial, leaving a smaller porportion for current consumption. The process of growth also requires that the resources have to be forced into new investment activity. For these reasons, the price rise in the initial stages of economic development, both in regard to resource inputs as well as consumption goods, is difficult to avoid, even though the economy attains equilibrium rate of growth with current savings matching additional investment outlay.

A case for inflationary method of financing investment has been made to rest also on one more ground. It has been argued that the disguisedly unemployed people on land in the overpopulated underdeveloped countries like India represent a saving potential which can be actualized in investment if they can be put on new jobs. The lack of finance then does not become a bottleneck, inasmuch as the economy can utilize this unemployed labor in new investment on more or less the same level of consumption of food by having recourse to credit-creation. This, however, is only a theoretical concept so far and requires inductive verification. From whatever impression one gets of the economic development in some of the underdeveloped countries, it appears that consumption of food by the newly employed workers tends to rise consequent on their employment. As a result, any credit expansion brought about as a counterpart to the saving potential only helps to depress the consumption level of the economically weak classes.

But what is operationally more meaningful, in the context of an underdeveloped economy, is the nature of the impact of inflation. Though inflationary pressures in their broad framework are similar in both underdeveloped and developed economies, the difference arises in regard to their modus operandi. And since the crucial variables affected by inflation are different, policy measures that

suggest themselves are also qualitatively different. The planning experiments that are being made in India over the last seven years in this connection are mor illuminating. They throw into bold relief the nature of the impact of inflation, th sensitive spots in the economy, and a close relationship between the variations i the rate of investment and the changes in the availability of food; they also show that recourse to inflationary methods does not always result in inflation, which means that the approach to the problem of planning in countries like India has to in real terms and that financial planning has to be conceived in relation to certai important factors which ultimately govern and regulate the process of economic development.

The main purpose of this article is to discuss how Indian economic devel-opment proceeded and how inflation has affected it both under the First and Secon Five Year Plans, to point out its implications for planning, and to indicate the na-ture of future difficulties which India is likely to encounter. In order that the ac-count of Indian planning and inflation should be more meaningful, it is prefaced with an analytical framework with reference to which the economic developments in India are described.

The Mechanics of Inflation

For a rapid expansion of the economy, the rate of investment has to be larger than the rate of population growth. The given scale of investment outlay can be sustained only if an adequate amount of consumer goods is forthcoming to absorb the additional money incomes arising from new investment; in its absence inflationary pressure would emerge. Thus, the principal limiting factor in eco-nomic development is the availability of consumption goods as ex definitione the underdeveloped economy suffers from a very low per capita consumption. It fol-lows, then, that if the economy can somehow procure a sufficient quantum of con-sumer goods, it would be in a position to maintain a greater level of investment and thus force the pace of capital formation. Of course, it is no doubt true that by making a full use of saving potential as represented by the diguised unemploye in the economy, the rate of investment can be stepped up, though in actual imple-mentation of planning, it is not always possible to ensure a release of consumpti of those workers who have now migrated to new investment; nor is it easy to curb the tendency of those workers who have stayed behind to consume more. For thi reason, in a developing economy, a great deal of pressure is exerted on consump tion goods and therefore prices tend to rise. While the shortage of consumer goods is a bottleneck of a long-term nature, there is also another bottleneck, i.e restricted supply of capital equipment which is mostly of a short-term nature, a it is conceivable to increase its availability in the long run, if an adequacy of co sumption goods is assured. In sum, therefore, it can be easily seen that the developing economy bumps into difficulties of inflationary pressures whenever these two bottlenecks appear on the scene. So far, the manner in which inflation pressures operate does not very much differ from that in more mature and rich countries; the paths of inflation actually diverge when one comes to disaggregatio of the demand for consumption goods.

It would be pertinent to see the nature of consumption goods on which the demand arising from new money incomes is expected to be concentrated. The ite on which a large proportion of income will be expended is food. Since populatio is, by and large, on a subnormal standard of living, newly employed people woul

tend to enhance their consumption of that item when their money incomes rise. Now, this increased consumption of food tends to raise the prices of food and thereby the incomes in the rural sector, though in fact the increased rural incomes are not generally spent on industrial products. For one thing, the windfall rise in the money incomes of the peasantry initially tends to remove the incentive for more production, and on the contrary, less is produced. For another, the agriculturists tend to consume a larger proportion of whatever output they produce, leaving a smaller margin to be exchanged for industrial goods. Thus, the benefit of expanded demand for consumption goods scarcely goes to industries other than agriculture, and we find a paradoxical situation wherein sagging markets in industrial consumption goods coexist with buoyant markets for food.

The implication of this is obvious for the process of inflation. Normally, in inflationary situations experienced in many advanced countries, when the demand for consumption goods expands, the profits of consumer goods industries spurt up and eventually create stable conditions, inasmuch as a larger proportion of profit earners' income is saved. On the other hand, the profit-wages ratio in a developing economy moves in a downward direction, at any rate in the initial stages. As we have seen above, the agricultural classes, who benefit from a growing demand for food, do not raise their profits because they tend to reduce their output. It has its ricocheting impact on the industries producing consumption goods other than food. Since the food prices increase, the cost of subsistence of industrial wage earners increases pari passu, which forces the industries to allow wage increases. This brings about a fall in the profit-wages ratio and therefore the rate of saving. The falling tendency in industrial profits is further fortified by sluggish demand conditions for industrial goods, because the demand for food increases more than in proportion to the rise in money incomes of the community. Furthermore, as in the initial stages of economic development, capital outlay is incurred on projects with a long gestation period; profits do not accrue till the projects are completed, but at the same time, wages form a substantially high proportion of total investment outlay. Thus, the falling profit-wages ratio, because of all these reasons, removes the natural stabilizer that normally operates in advanced countries, and in consequence inflationary pressures are more acutely felt on the available food supply.

It has to be emphasized here that the type of such inflationary conditions does not necessarily emerge from a rising rate of investment in the economy; it may as well result from a steep decline in food output without any change in the rate of investment. A perceptible fall in food makes, thus, even the existing level of investment untenable.

Though a lack of an adequate quantity of food can be a serious limiting factor in the process of growth, the changes in the stocks of food are perhaps more crucial insofar as they determine the availability of food in a growing economy. The proportion of the output that is marketed is very significant in the case of food where subsistence farming is comparatively predominating than in regard to commercial crops. Because of this, the magnitude of changes in marketed surplus is larger than that of changes in production. Any small discrepancy between technical conditions of demand for food and supply of food brings about a more than proportionate variation in the stocks and, therefore, in prices. If demand is expected to exceed the supply of food, it induces the producers, traders, and consumers to increase their stocks in view of the expectation of a price rise, and its impact is very much magnified. Thus, in the wake of economic development of underdeveloped countries, the crucial role of stock variation has to be recognized.

The modus operandi of inflation in a developing economy differs in one more respect. Normally, it is to be expected that in an inflationary situation an import surplus should result in reducing inflationary pressures, the assumption underlying this being that increased domestic incomes absorb imported consumer goods. If the type of import surplus that the developing economy develops is disaggregated, it will be easily seen that it would consist mainly in capital goods, which constitute the direct requirements of investment planned, because the economy of the underdeveloped country, being incapable of producing a significant volume of capital goods internally, has to rely on imports. Thus, such import surplus, instead of constituting a disinflationary force, would on the contrary be inflationary to the extent to which it would necessitate complementary investment expenditure, thereby generating an additional demand for consumer goods.

The Impact of Inflation--The Indian Experience

We would now discuss the Indian experience with reference to the analytical framework set out above. Our study will be confined mainly to the period beginning from 1951 when India embarked upon a deliberate process of economic development under the First Five Year Plan. India, no doubt, had passed through the phase of inflationary pressures before 1951, more particularly during the war and postwar period due to a combination of circumstances arising from war expenditure, devaluation of the rupee, and the Korean war boom. However, the kind of inflation that was so generated was largely the result of the operation of external factors and was unconnected with the process of growth of the economy as such.

The goal that the economy has set before itself is to attain the level of investment by 1960-61 which would form about 10 percent of the national income. Considering that investment formed only about 5 percent of national income in 1951 when the First Plan was launched, this would naturally involve a large amount of effort. It is however noteworthy that in the earlier phase of economic development, particularly from 1951-52 to 1954-55, no impact of inflation was felt either on the domestic situation or on the Indian balance of payments position, despite the acceleration in the rate of investment during that period. On the contrary, the prices of all commodities, but more significantly of food, which is the most essential item of the community's consumption, tended to slump till the end of 1954-55 when symptoms of inflation began to emerge. The index of wholesale prices, which can be taken as reflecting the intensity of inflationary demand, witnessed a sharp fall to the extent of about 14 percent in the very first year; the fall in food prices was slightly more, at about 17 percent, while the sharpest decline of 30 percent was in respect of raw materials. Though the prices recovered somewhat in 1952-53 and 1953-54, the declining price trend continued in an accelerated fashion through 1954-55, with food prices bearing the major impact, inasmuch as they fell by 22 percent. From then onwards, however, there was a distinct and clear break with the declining trend in prices, and they rather suddenly started increasing. Thus, food prices showed a striking increase of the order of 43 percent between June 1955 and March 1958, while prices of raw materials and semi-manufactures rose by 26 and 19 per cent respectively. But the smaller increase of only 4 percent was in prices of manufactures. What is striking in this connection is the fact that it was food and raw materials which felt the pressure of demand. One special feature of this price inflation is that the duration of this phase has been much longer and continuous than earlier phases experienced since 1949.

The real explanation of this paradoxical situation of accelerated price fall in the wake of rapid expansion of the economy in the earlier phase of planning, and a subsequent emergence of acute inflationary pressure of demand on food, has to be sought in the interrelationship between various variables like the rate of investment, the availability of food, and the behavior of stocks of foodgrains. It will be seen from Table 1, which gives figures relating to the variation in the rate of investment both in the public and private sectors in each year from 1951-52 and the movements in food supply, that, till 1954-55 when the food position had substantially improved, the inflationary pressures were not permitted to creep into the economy, even though investment was stepped up at a rapid pace.

Table I. Volume of Investment and Availability of Food[1]

Year	Private investment (in millions of rupees)	Public investment (in millions of rupees)	Total investment (in millions of rupees)	% change over previous year	Availability of food (in thousands of tons)	% change over previous year
1951-52	3,630	1,820	5,450	- 6.2	56,956	+ 2
1952-53	3,730	1,970	5,700	+ 4.6	61,711	+ 8
1953-54	4,250	2,490	6,740	+18.2	71,166	+15
1954-55	4,220	3,880	8,100	+20.2	68,198	- 4
1955-56	4,790	4,960	9,750	+20.4	67,010	- 2
1956-57	5,940	5,100	11,040	+13.2	73,367	+ 9
1957-58	5,670	6,710	12,380	+12.1		

This would throw in bold relief that, because the food availability increased till 1953-54, the money demand generated by rising investment expenditure in the economy did not exert excessive pressure on general prices. It is true that the food supply did decline in 1954-55 by about 4 percent as compared to the peak level reached in the preceding year. However, it did not result in price rise in the same year, because of the inevitable lag that intervenes between production and its flow to the market. After 1954-55, as we have observed above, the stresses manifested themselves in food prices. It so happened that an expanding investment expenditure was set against a falling or stationary level of food supply, so that the higher level of money incomes increased the aggregate demand for food which could not be met at the old level of prices. Thus, from the juxtaposition of the rate of investment and level of food availability, it is apparent that the bottleneck of relative insufficiency of food made it difficult to sustain the rising rate of investment projected in the Second Five Year Plan.

But mere technical maladjustment between demand and supply conditions[2] does not explain either the accelerated price fall in 1954-55 or the accelerated

1. The figures of private and public investment are as estimated by V. V. Bhatt in his article appearing elsewhere in this issue.

2. For an illuminating analysis of food problems, see S. Sachi, "Changes in Stocks and Fluctuation in Food Prices, The Economic Weekly, November 23, 1957.

price rise since 1955 onward; the behavior of stocks which is the most volatile factor did play a significant role in accentuating the price trends in either direction. The distinction has to be drawn between the tendency for food prices to change and the actual extent of that change. When the food position is comfortable in relation to the current demand, the stocks all along the line--with producers, consumers, and traders--tend to decline in view of the expectations of a price fall and the initial discrepancy between demand and supply is very much magnified in consequence; the reverse takes place in the opposite situation when demand for food tends to outstrip the supply. Precisely the same seems to have happened in India over the last few years. It is very difficult to assess the variations in quantitative terms, because of the dearth of relevant statistics regarding volume of stocks with producers and traders. Whatever little evidence there is to support our hypothesis is of a qualitative nature. However, some statistics regarding the changes in marketed surplus which can be taken as a good indicator of stock variation with the producers are available from the Foodgrains Enquiry Commission's report, published some time towards the close of 1957.

Table II. Marketed Surplus of Rice

District	Year	% change in production	% change in prices	% change in marketed surplus	Marketed surplus as a % of production in each year
Nizamabad	1954-55	-24.4	-24.0	+64.3	35.1
	1955-56	+14.0	+20.6	-10.2	27.7
	1956-57[a]	+ 4.0	+26.2	+ 8.3	24.8
Mahboobnagar	1954-55	+22.3	-15.4	+32.5	28.4
	1955-56	+ 0.8	+11.8	- 3.5	27.2
	1956-57[a]	+22.1	+17.6	+34.9	27.2
Warrangal	1954-55	-35.4	-25.2	+ 3.7	25.6
	1955-56	+ 1.8	+27.4	+18.5	29.8
	1956-57[a]	+34.4	+22.5	-10.3	16.8

a. Nine months.
Source: Report of the Foodgrains Enquiry Committee, pp. 188-189.

It would be clear from the above table that the marketed surplus of rice, by and large, increased in 1954-55 in relation to 1953-54 when prices declined even when production had fallen substantially. On the other hand, during 1955-56 and 1956-57, the marketed surplus either decreased sharply or increased less than in proportion to expansion of production because of the price rise. As a result, the actual extent of price rise since 1955 was much more than the technical discrepancy between aggregate demand and supply warranted. This conclusion was further supported by the firsthand qualitative information collected by the Foodgrains Enquiry Committee, which stated, "With a situation thus generally favourable to prices of foodgrains, it was first the short-fall in production and later the slowing down in market arrivals which released the spring, as it were,

and pushed the prices of foodgrains sharply upward from the low levels to which they had falled in 1954-55".[3]

Together with the producers, the traders could and did aggravate the pressure on food prices by increasing the stocks beyond the normal level to take advantage of the rise in prices. No data, however, are available about the stocks with traders, though bank advances against foodgrains may give a fair idea about the variation in traders' stocks. Thus, scheduled bank credit against the security of foodgrains increased by Rs. 16.5 crores, i.e., 104 percent, between April 1955 and the end of March 1956. Even granting that a portion of this expanded credit was necessitated to some extent by growing economic activity in agriculture and trade, the fact remains that a sizeable proportion of that credit was harnessed to build up stocks by traders. If it is recognized that this was the period which experienced an upsurge in food prices and that subsequent monetary restrictions, both quantitative and qualitative, imposed by the Reserve Bank of India did bring down the credit totals and to some extent inflationary pressures, it would not be difficult to see the link between the stock variations with traders and changes in food prices.

Although food prices were under constant pressure of demand aggravated by a fall in food output and in marketed surplus on the one hand, and rising money incomes on the other, the inflationary process was not all-pervading, bringing within its orbit all manner of consumer goods, as usually occurs in a well-developed industrial economy. The index of finished manufactured articles increased but slowly and was subsequently out of step with food prices. As a consequence, the terms of exchange between the agricultural sector and the industrial sector turned adverse to the latter. Thus, the prices of agricultural commodities increased by as much as 53 percent during April 1955 to July 1957, while those of industrial goods increased by only 4 percent in the same period. In such circumstances, it should be normally expected that an increasing proportion of rural incomes should be spent on industrial goods such as cloth. However, the trends in foodgrains in particular bear out the fact that food output, instead of expanding in response to price stimuli, showed a fall, apart from a recognized increase in self-consumption and stock holding by the producers. Furthermore, the demand for foodgrains rose more than in proportion to the increase in money incomes. The latest series of national income statistics reveals that money income rose by around 4 percent during 1955-56 and 14 percent during 1956-57. Taking the best estimate of income-elasticity in India of 0.8 percent,[4] the food consumption demand must have grown at a 3.2 percent rate in 1955-56, and 11.2 percent in 1956-57. If a rise of 2 percent is added to this consumption demand on account of a population growth of about 2 percent, it would follow that the demand for food during the year beginning from 1955-56, was almost rising faster than the annual rise in money incomes. This meant that a portion of income which was previously spent on other goods was now diverted to food. This was why the demand for cloth slackened of late leading to the accumulation of stocks, while at the same time, inflationary pressure on food was accentuated.

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3. Government of India, Ministry of Food and Agriculture, Report of the Foodgrains Enquiry Committee 1957, New Delhi, 1957, p. 48.

4. A. J. Coale and E. M. Hoover, Population Growth and Economic Development in Low-Income Countries, Princeton, 1958, p. 126; see also Sachi, op. cit.

Thus the concentration of demand on only food as also the long gestation period of many of the investment projects under the Second Plan brought about a fall in the profit-wages ratio, as is apparent from a slight decline in the proportion of domestic savings to national income from 7.6 percent in 1955-56 to 7.5 percent in 1956-57.[5]

If the main bottleneck in the economy, which is getting into stride for rapid economic development, is the shortage of food, it follows that the feasible rate of investment in a period of spurt in food supply would be very much higher than it would be in its absence. It would therefore mean that in the first four years of the First Five Year Plan the Indian economy never could reach the level of investment which it could have done otherwise. In other words, the actual rate of investment then was much smaller than the potential investment rate. That this was so is also obvious from a very small order of deficit financing incurred during that period by both the center and the states. Thus, while in the first year of the First Plan no deficit was incurred, in the subsequent three years together it amounted to Rs. 257 crores. When there is an adequate volume of food in the economy available for consumption, it invariably provides a leeway for either credit creation by the banking system or deficit financing by the state to step up investment, as any resulting increased demand would be easily satisfied. Since, however, the rate of investment was not raised to the feasible level indicated by availability of food during that period, the prices of food declined, thereby dissipating the savings. It is no doubt true that the actual rise in real national income from 1951-52 to 1954-55 was even more than planned for; but it is not so much the result of attaining a maximum rate of investment as due to the fact that the relationship which was initially presumed to have subsisted between investment and output was falsified by the adventitious increase in food output in 1952-53 and 1953-54. Perhaps a larger investment during this period would have obviated some of the strains and tensions the Indian economy passed through at subsequent stages. The Planning Commission has spotlighted this aspect when it pointed out that "In retrospect it appears that at certain stages in the Five-year period, investment could, with advantage, have been stepped up beyond the levels then current."[6]

Of course, it is to be realized that a spurt in food output in a particular year does not make it possible to bring about promptly a corresponding rise in investment outlay to match it; there is bound to be a substantial lag between the change in food output and the consequent change in the volume of investment. Notwithstanding all this, it is arguable whether the authorities should not have linked up both through the flexible operation of buffer stocks, so that it would have absorbed the surplus food output when prices were falling all around and released it when the prices were moving upward. Actually, the Government of India did build up stocks up to a limit and pursued a policy of price support in respect to food; it was not of much avail, however, since it was divorced from the main objective of investment programming as rightly emphasized by the Foodgrains Enquiry Committee.[7]

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5. See V. V. Bhatt's article elsewhere in this issue.

6. India, Planning Commission, Review of the First Five Year Plan, Delhi, 1957, p. 13.

7. Report of the Foodgrains Enquiry Committee, op. cit., p. 51.

External Disequilibrium

A sort of perpetual shortage of foreign exchange is another limiting factor in a growing economy like India's, because of the low capacity to manufacture capital goods like steel, machinery, etc., in adequate volume. Over the first five years, therefore, it was anticipated that India would have an average payments deficit of the order of Rs. 180-200 crores per annum, and it was expected to rise to about Rs. 300 crores per annum over the next five years. This was found to be necessary to import mostly capital goods for many a capital-intensive project apart from some quantum of food. The actual balance of payments of India, together with the variations in her foreign exchange reserves since 1951-52, is presented in Table III.

Table III. India's Balance of Payments, 1951-52 to 1955-56
(Current Account, in millions of rupees)

	Imports c.i.f.	Exports f.o.b.	Trade balance	Official donations	Other invisibles	Total current transactions (net)	Movement in foreign exchange reserves
1951-52	962.9	730.1	-232.8	+ 5.3	+ 64.9	-162.6	-164.7
1952-53	633.0	601.9	- 31.1	+ 10.8	+ 80.5	+ 60.2	+ 16.7
1953-54	591.8	539.7	- 52.1	+ 19.0	+ 80.5	+ 47.4	+ 28.9
1954-55	683.8	596.6	- 87.2	+ 15.8	+ 77.4	+ 6.0	- 18.1
1955-56	750.6	641.1	-109.5	+ 42.0	+ 84.4	+ 16.9	+ 10.5
1956-57	1,095.6	635.1	-460.5	+ 44.7	+109.0	-306.8	-221.3[b]
1957-58[a]	1,174.3	594.5	-579.8	+ 29.2	+100.0	-450.6	-259.9[b]

a. Preliminary.
b. Without taking credit for borrowings from the I.M.F., the decline in reserves during 1956-57 and 1957-58 would be Rs. 282.3 crores and Rs. 294.4 crores, respectively.

Source: Reserve Bank of India, India's Balance of Payments 1948-49 - 1955-56.

It would be observed that during the first five years, except in 1951-52 when there was a draft on foreign exchange reserves of about Rs. 165 crores mainly because of massive food imports and in 1954-55 which had a nominal deficit, there was actually a surplus on current account till 1955-56. Similarly, the utilization of grants and loans over that period amounted to Rs. 188 crores against Rs. 298 crores authorized. The rate of capital goods imports (Table IV) had actually declined in 1952-53 and rose by only 4.7 percent in the following year, while it showed a steady but significant bulge in 1954-55, 1955-56, and 1956-57; only in 1957-58, the capital goods imports slowed down as a result of the imposition of import restrictions. When the foreign exchange should normally prove to be a serious limiting factor, this so-called stability in the foreign payments position of India during 1951-52 to 1955-56 could only mean that the available foreign exchange resources were not utilized to the maximum possible extent. In fact, tensions and frictions are rather unavoidable in the process of growth, which implies a rupture of the existing equilibrium to attain a new one, and anything to the contrary points

Table IV. India's Imports of Capital Goods (in millions of Rs.)

	Private	% increase	Govern-ment	% increase	Total	% increase
1951-52[a]	155.90		21.50		177.40	
1952-53[a]	131.90	-15.4	20.50	- 4.7	152.40	-14.1
1953-54	118.80	- 9.9	40.70	+98.5	159.50	+ 4.7
1954-55	173.69	+46.2	47.77	+17.4	221.46	+38.8
1955-56	237.70	+36.9	76.60	+60.4	314.30	+41.9
1956-57	371.30	+56.3	129.80	+69.4	501.10	+59.4
1957-58[b]	321.20	-13.5	212.70	+63.9	533.90	+ 6.5

a. Estimated.
b. Preliminary

towards the fact that the economy has failed to reach its potential rate of investment. Thus, the presence of stability either in the internal economic situation in the balance of payments is not necessarily indicative of the maximum growth of the economy any more than credit creation in the face of availability of food suggestive of emergence of inflationary pressure.

But the real impact of investment on the Indian balance of payments was observed in 1956-57 and 1957-58 when, under the Second Five Year Plan, a much higher rate of investment was planned. The total deficit on current account was large as Rs. 757 crores during both the years, and a consequent draft on foreign exchange assets amounted to Rs. 481 crores. However, such a huge dip in foreign exchange reserves, which was higher than planned for mainly due to the initial underestimation, did not arise from the internal inflationary pressures, but was the main related to the structure and size of the Second Five Year Plan. Normally it would have been expected than an import surplus of this order would act as a disinflationary force. In India, on the contrary, the very import surplus, far from being a counteracting force as is very often believed, was a positively active agent which intensified the pressure of demand on inelastic food supply. This was because a major portion of imports comprised capital goods like steel, iron, machinery, and defense stores, which, however, could not satisfy the consumption demand for food, stemming from rising money incomes in the economy (Appendix A). The only item in the import surplus which went some way to attenuate the pressure of consumption demand was the heavy imports of food which aggregated to Rs. 200 crores obtained under P. L. 480 from the United States. On the other hand, the imports of capital goods, financed mainly by drawing on foreign exchange assets, created demand for consumption inasmuch as they called for a complementary domestic investment expenditure and thus to a great extent aggravated domestic inflationary conditions.[8]

It is arguable that import surpluses reduced domestic inflationary pressures via their impact on foreign exchange reserves; to the extent to which they are

8. See S. Sachi, "A Basic Fallacy in Planning Commission's Appraisal", The Economic Weekly, May 17, 1958, pp. 676-677.

financed by drafts on foreign exchange, domestic money supply would be correspondingly reduced. It is admittedly true that a decline of about Rs. 480 crores did curtail an expansion of money supply which was brought about by a deficit financing of about Rs. 700 crores. This by itself, however, should not be taken to mean that the domestic effective demand is curtailed pari passu with the reduction in the money supply, because the effective demand is as well a function of the velocity of money. When the supply of money declines and investment tends to be high, the lower quantity of money is more intensively utilized and the same has happened in India during 1956-57 and 1957-58. The income velocity of money, which was around 5 in 1955-56, increased to 5.4 in 1956-57, which offset a fall in money supply and thus helped to maintain the effective demand on more or less the same level.[9] Had the money supply not contracted as a result of the fall in foreign exchange reserves, there was sufficient ground to believe that income-velocity of money would not have gone up as it did. Actually, the effective demand pitched at a high level, because the rate of investment was very high, despite the fact that available consumption goods, i.e., food, were inadequate.

Future Perspective

Summing up the entire discussion in the foregoing paragraphs, it would clearly appear that the principal limiting factors which tend to bedevil Indian economic development are foreign exchange and food. After correcting initial estimates, the foreign exchange component of the Second Five Year Plan was expected to amount to about Rs. 1700 crores out of which in the first two years of the Second Plan, i.e., 1956-57 and 1957-58 only, approximately Rs. 800 crores have been already used up, and the third year's utilization has been placed at around Rs. 300 crores. Thus, there would still be a gap of Rs. 600 crores during 1959-60 and 1960-61. The magnitude of this gap no less than the manner in which it should be bridged pose a problem not only for Indian planners but also for the capital-rich countries like the U.S. and Germany, who could provide the wherewithal of external resources. The deterioration in the Indian balance of payments position during the last two years, and the consequent sliding down of her external resources, it should be recognized, did not result from internal inflationary pressures, as in the case of many a country in 1955 and 1956, but was related in the main to the direct requirements of the size and pattern of investment effort projected in her Second Five Year Plan. The building up of social overheads like communication and transport and irrigation is a sine qua non of economic development insofar as it creates a growth potential, and since the resource inputs in such projects have to be obtained from outside the country, the foreign exchange in required volume has to be made available. Considering in retrospect that countries like the U.S., Japan, and Sweden attained their peak rates of growth in the latter half of the nineteenth century and the first decade of the twentieth century, which coincided with a massive inflow of foreign capital into those countries, the foreign exchange shortage which India is experiencing at present should not come in as a surprise. The average rate of growth of five percent per annum as planned by India, when put in juxtaposition with the annual rate of growth of population of about 2 percent, can by no means be taken as an ambitious target. And

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9. See Sachi, "A Basic Fallacy in Planning Commission's Appraisal", op. cit., and D. Shenoy, "Inflation and Import Surplus", The Economic Weekly, June 21, 1958.

if that be so, it follows that the foreign exchange requirements of India of the order of Rs. 600 crores for the next two or three years are not large, either in relation to her needs or the capacity of the lending countries like the U.S., Germany, and the U. K. Even in the larger context of the world economy, such external assistance to a country like India which is planning her progress within the framework of democracy, would be a distinct gain, insofar as the volume of world trade would increase in the course of time, apart from the fact that the rapid and substantial economic development of India would act as a bulwark against economically and politically explosive situations.

The availability of foreign exchange, however, forms only a part of the story of Indian planning; food being the main sensitive spot bearing the impact of inflation, steps are necessary to increase food output.[10] The fortunes of India's economic development have fluctuated in the past, with the unpredictable behavior of rains which governed the changes in food output. The irrigation facilities are being spread throughout the country through construction of huge dams and irrigation networks which would become the epicenters of expanded food output in the course of time. These projects, however, have a long gestation period, and their effect on output of food would be felt after a long time. Until such time, India should be assured of a supply of food from those countries which have surplus stock. This kind of utilization of food surpluses ensures a steady growth of an undeveloped economy without the scourge of inflationary pressures, while facilitating at the same time the price support policies in food-lending countries. The assistance in the form of wheat loans to India under P. L. 480 from the U.S. presents a splendid example of the beneficial impact of food surpluses. There is no reason, therefore, why more such assistance should not be offered in times to come, particularly in the context of the recessionary trends in the U.S. Furthermore, India can, by entering into bilateral agreements with some Southeast Asian countries like Burma and Thailand, import food on a long-term basis, against export of some of the manufactured goods and iron ore or manganese. This would be mutually advantageous, inasmuch as the food-exporting countries will be insured against the price hazards involved in the export of food, and India will be assured of a steady supply of the food which is stalling her development efforts.

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10. See D. Shenoy, "Rephasing the Plan: Some Considerations", The Economic Weekly, December 3, 1957.

Appendix A. Composition of India's Imports (in Rs. lakhs)

	1951-52			1952-53			1953-54			1954-55		
	Priv.	Govt.	Total	Priv.	Govt.	Total	Priv.	Govt.	Total	Priv.	Govt.	Total
Food	n.a.	n.a.	n.a.	n.a.	13,954	n.a.	280	6,503	6,783	1,453	8,621	10,074
Others	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	2,650	460	3,110	3,112	741	3,853
a. Total food	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	2,930	6,963	9,893	4,565	9,362	13,927
b. Consumer goods	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	11,340	-	11,340	11,129	-	11,129
c. Raw materials	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	19,660	300	19,960	19,319	-	19,319
d. Capital goods	15,590	2,150[a]	17,740[a]	13,190	2,050[a]	15,240[a]	11,880	4,070	15,950	17,369	4,777	22,146
i. Locomotives	30[a]	-	30[a]	30	-	30[a]	50	-	50	287	-	287
ii. Machinery	8,810			7,630			7,070	2,550[b]	9,620	8,435	3,495[b]	11,930
iii. Metals	3,980			3,460			2,860	720	3,580	4,884	252	5,136
iv. Vehicles	2,310			1,610			1,440	800	2,240	2,432	1,030	3,462
v. Ships and aircrafts	460[a]	-	460[a]	460[a]	-	460[a]	460	-	460	1,331	-	1,331
e. Others							-	2,038	2,038	-	1,845	1,845
Total imports (a + b + c + d + e)	66,820	29,470	96,290	44,270	18,611	62,881	45,810	13,371	59,181	52,382	15,984	68,366

(Continued on next page; notes on next page)

Appendix A (continued)

	1955-56			1956-57			1957-58		
	Priv.	Govt.	Total	Priv.	Govt.	Total	Priv.	Govt.	Total
Food		3,240	3,240	-	10,610	10,610	-	15,240	15,240
Others		-	-	-	-	-	-	-	-
a. Total food	3,080	3,240	6,320	-	10,610	10,610	-	15,240	15,240
b. Consumer goods	13,200	-	13,200	9,520	-	9,520	7,390	-	7,390
c. Raw materials	21,290	-	21,290	18,240	-	18,240	12,900	-	12,900
d. Capital goods	23,770	7,660	31,430	37,130	12,980	50,110	32,120	21,270	53,390
i. Locomotives				250	-	250	150	-	150
ii. Machinery	11,250[b]	5,130[b]	16,380[b]	15,550	9,040[b]	24,590	16,440	13,760[b]	30,200
iii. Metals	8,210	1,210	9,420	15,560	1,430[c]	16,990	11,640	5,160[c]	16,800
iv. Vehicles	4,310	1,320	5,630	4,370	2,510	6,880	3,430	2,350	5,780
v. Ships and aircrafts				1,400	-	1,400	460	-	460
e. Others	1,030	3,110	4,140	15,540	5,560	21,100	15,790	12,720	28,510
Total imports (a + b + c + d + e)	62,370	14,010	76,380	80,430	29,150	109,580	68,200	49,230	117,430

a. Estimate.
b. Includes locomotives.
c. Iron and steel.

Note: In the years 1956-57 and 1957-58, figures for consumer goods comprise cutlery and hardware, electrical goods, paper, pasteboard and stationery, woolen yarn and manufactures and rayon textiles only; while raw materials comprise mineral oil, cotton raw and waste, jute raw and waste, dyes and colors and chemicals only.

DROPPING THE PILOT: A REVIEW*

Daniel Thorner[1]
Bombay

This volume consists mainly of excerpts from letters, memos, and other documents written by Albert Mayer, a New York architect, during the decade 1946-1955, when he was active in promoting and participating in a program of rural reconstruction in Northern India. Subsequently, explanatory and connective materials have been added by Mayer himself and his two collaborators--Marriott, an anthropologist, and Park, a political scientist.

The authors would have us believe that the name of Etawah--the district in which Mayer commenced his operations--has already become an international byword. We read in the preface: "What the Rochdale Experiment in England is to the world's cooperative movement, what the Tennessee Valley Administration is to the integrated exploitation of the world's great watersheds, this the Etawah project has fast become to the movement for revitalizing the ways of life of the world's peasantry."

Let us simply look into the more modest assertion made a few lines further on, that the experiment from 1948 onward at Etawah has become by 1956 the "prototype for Community Development Projects and National Extension Service blocks in thousands of villages in every part of India" (Preface, p. xi).

We may begin by trying to sketch an outline of the Etawah Project itself. It is rather difficult to make out the salient features of the program envisaged by Mayer because of the vagueness of the successive versions reproduced in this book. Essentially, Mayer's idea was to proceed through action, discovering as he went along what to do next. At each phase, he was to be guided by rule of thumb and his own hunches. The scope of his activities was conceived broadly as impinging upon agriculture, animal husbandry, village industries, road building, housing, sanitation, education, etc. Yet he set himself no overall goal in any of these fields. His target, insofar as it may be stated, was the point at which village life would be so transformed that the process of all-round improvement would continue and expand by its own momentum after the withdrawal of outside assistance.

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* Pilot Project, India: The Story of Rural Development at Etawah, Uttar Pradesh, by Albert Mayer and Associates, in collaboration with McKim Marriott and Richard L. Park. Berkeley and Los Angeles: The University of California Press, 1958, pp. xxiv + 367, $5.50.

1. The author is associated with the Indian Statistical Institute (Bombay Branch) and with the Indian Cooperative Union, New Delhi; but this note expresses his personal views and not those of either organization.

Certain assumptions about the institutional framework of rural India are implicit in Mr. Mayer's proposals, although neither he nor his co-authors make any effort to state them. Fundamentally, the project method rests on a degree of confidence that structural obstacles to village progress are either non-existent or insignificant. From this point of view, no account need be taken of such factors as land tenure, population pressure, or relations between city and country. Rather, the task is approached as one of sheer mechanics: if sufficient energy can be applied to get the ball rolling, the inertia of motion will do the rest.

From the beginning, Mayer was more specific about his means than his ends. His greatest insistence was on the value of sustained, thorough, intensive developmental work in a limited area over a considerable number of years. Government assistance, he argued, should be poured without stint into a few high-priority projects in order to insure their success. The surrounding regions in turn would benefit through the radiation of advanced agricultural techniques which had shown their worth in the project areas. To facilitate speedy Governmental action, development work was to be provided with its own channel of authority, independent of the established bureaucracy. Great attention was to be paid to problems of staff morale. All efforts were to be imbued with a special sense of urgency. Much emphasis was laid on the replacement of the Agricultural Department's rural development organizer by a new, somewhat better-paid, local functionary to be known as a multi-purpose village-level worker. In all essentials, since Etawah was put forward as a pilot undertaking, the program eventually chalked out had to be of a type which could be reproduced in other parts of India.

Unfortunately, no base-line survey was ever made at Etawah, and no statistics were kept for a comparable control area not subject to intensive revitalization activities. No estimate is provided of the investment in terms of money, time, and trained personnel. It is, accordingly, impossible to assess the accomplishments of the early project years. Nor can we judge, from the evidence presented in this book, on what basis decisions were actually taken to retain or modify methods and aims. Rather than evolving a proved model for the rest of India, the Etawah project itself appears to have remained in the trial and error stage throughout the period covered in the book.

From Mayer's own documents--often highly critical--we learn that subsequent village reconstruction work departed sharply from the techniques on which he banked most heavily. Firstly, the Government of India shifted from intensive activity in small areas to "thin" rapid coverage of the whole country through a National Extension Service. In this setting the policy of waiting for the recommended agricultural practices to spread from the initial project areas on the strength of their proved value was abandoned. Instead, the Extension Service undertook to secure speedy universal adoption of approved methods through official exhortation and encouragement.

Again, the independent channel of authority devised for Etawah and Mayer's other projects in Uttar Pradesh was closed off; the responsibility for development work has been returned to the regular administrative hierarchy. The village-level workers have been subordinated and their prestige has suffered. In the ranks of the development personnel, Mayer tells us, the sense of urgency and the spirit of dedication have evaporated.

After a while, Etawah came to be seen by Mayer himself as a unique case, which could not reasonably have been expected to be duplicated elsewhere. As early as 1950 Mayer noted that the indispensable sheaf of governmental approvals and authorizations for each step of the action program at Etawah had been obtained only "by dint of strenuous special effort and high level attention to pry things open--efforts and attention which cannot be expected to continue when such enterprises multiply" (p. 92). In point of fact, Mayer had relied heavily on personal intervention by the Chief Minister of Uttar Pradesh and the Prime Minister of India. Addressing himself to the problem of overcoming these difficulties in subsequent projects, Mayer wrote:

> So the big effort now is to try to convince enough important people of the necessity for some general and corollary specific changes in the whole administrative system, so that such projects can flourish. It augurs a good deal of temerity and egoism to be even thinking that one can accomplish this, and in calmness I don't. But one must certainly try at a tempo and with a persistency as though one were convinced of its attainability. The fact is that I did not foresee this terrific implication when I first formulated and tackled our project. But it has got to be met and grappled with (p. 93).

By 1956, Mayer was apparently conceding that his efforts to revise the entire governmental structure had been in vain, and that his only real "success" had been at Etawah: "For experience at Etawah has shown that six or seven years of sustained intensive work are required in order to reach that stage at which the people themselves take hold of the work and seek to further their own development. Only at Etawah has such sustained effort been possible. Etawah alone among all projects in the country has not been subject to the excessive competition to which all other more recent projects have been subject. It alone has not been bedeviled by the need for over-speedy tangible immediate annual showing in terms of miles of roads, numbers of new buildings, thousands of yards of paved drains. At Etawah only have there been opportunities for longer-range views and longer-range flexible methods to show themselves as they are--cumulatively and overwhelmingly better (pp. 318-19).

He himself was even beginning to point to the danger of general stagnation: "Contrasting with Etawah in their targets and timetables, all the many hundreds--and soon thousands--of National Extension projects follow a relatively firm, set pattern. And it is still the habit of mind of our project leaders in India not to deviate appreciably from set patterns, nor to exercise initiative and originality--not to have, in short, an empirical urge and outlook. The inevitably competitive race toward fixed goals also militates against questioning the set pattern, against developing any new 'angles' or methods, for fear of falling behind. We workers in rural development are thus in danger of stagnation at a level, only somewhat different from the level where we began" (p. 319).

Other observers have not been so confident as Mayer that Etawah itself has remained a shining exception to these trends. There are grounds for believing that, at least by 1958 (and possibly much earlier), the work there was tending to the same dead level as in other project areas.

One aspect in which the large-scale governmental program of community development appears to follow the lead given by Mr. Mayer at Etawah is in the

side-tracking of basic agrarian questions. The terms of reference of the National Extension Service, like those of the Pilot Project, take no cognizance of such issues as land reform. With this orientation both of these recent programs are proceeding in well-worn grooves. Half a century of older efforts at village uplift, largely undertaken by foreigners, had been characterized by a similar reluctance to come to grips with underlying problems. Remains of these earlier schemes may be found today in every part of India, in one or another stage of dilapidation.

In view of this history of repeated failures, much interest would attach to an analysis of the reasons why a further attempt of the same general nature was entrusted by the new Government of India to another person from abroad. As he himself points out, Mayer had no qualifications for this sort of work. He gives a curious picture of himself in 1946-47, coming with surprise upon the existence of the discipline of rural sociology and thumbing for ideas through the works of Brayne, Darling, the Wisers, Hatch, Kumarappa, and Nanavati and Anjaria.

Again, on what grounds did the Government of India, having asked Mr. Mayer to take up a leading role in replanning village life, later set aside his major recommendations? What was involved in the fundamental shift from the intensive style of work at Etawah to the extension service policy? All we are given is a footnote reference on page 316 to unspecified "higher political considerations".

This volume can be useful as a sourcebook on Mr. Mayer's rural betterment techniques and his assessment of the achievements at Etawah. It provides no systematic analysis of the origin, course of development, or role in the Indian scene of the Pilot Project. As a collection of documents, it does not draw widely enough from the materials on what happened at Etawah, and on what did not happen.

REPLIES FROM THE PILOT HOUSE

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A student of India's experiments in rural development may find answers to some of Dr. Thorner's question in the book, Pilot Project, India.

1. Planning? The student will there find exemplified a philosophy of rural planning which refuses to begin with its ends, but which proposes to take its direction and timing from needs felt by the people planned for. He may trace a plan so conceived at Etawah as it develops through numbers of stud bulls, varieties of potatoes, etc., and through 125 pages showing how these and other items worked, or failed and were modified.

2. Personnel? A reader will find the table of organization of 42 development workers in 98 villages, with 70 pages describing their operation through eight years in the field at Etawah and in derivative projects.

3. Costs? A reader will find the Etawah project reported as cheap: once begun, it cost annually about Rs. 350,000--less than the cost of a non-intensive N.E.S. area, and about half the cost of an intensive Community Project. He will find that about 60 percent of funds were spent on agriculture, whose production achieved increases commonly exceeding 50 percent as estimated by crop-cuttings. Productive return to the villagers on governmental expenditure at Etawah each year is believed to vary between 6:1 and 12:1.

4. Repeatibility? A reader will discover that pilot projects were doubled each year from 1949 to 1952. Projects like Etawah's were reproduced in four other districts of U.P., and the total pilot area was expanded gradually to about 15 times its original size. As a next step, 15 new pilot projects were launched throughout India in 1952. But these were at once swamped by a national plan for 167, then for many hundreds of more hurried projects. Four years of experience in U.P. had shown that projects of Etawah quality could be repeated and redoubled annually without the special interventions which had been needed at the outset. Albert Mayer's doubts concern not these, but the hundreds of subsequent projects poured hastily from the Etawah mold without provision for continuity of personnel or maintenance of standards.

5. Collapse? Will efforts in the pilot areas disintegrate as soon as governmental assistance is withdrawn? A pessimistic reader may find Albert Mayer's own suggestions of interest: withdraw services only as they are taken over and run by villagers for themselves; use tax receipts from increased production to maintain essential governmental services permanently.

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